Sky & Telescope's

POCKET SKY ATLAS

Roger W. Sinnott



Sky Publishing Corp.



Constellation boundary

Fringe of Milky Way

Constellation figure

Bright Milky Way

Chart number

Chart number

Right-ascension label

Arrows to adjoining charts

Declination label

Sky & Telescope's

Pocket Sky Atlas



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Roger W. Sinnott

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Cambridge, Massachusetts, USA

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R.A. Range	*Evening*	*Midnight*	*Morning*	*Charts*
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3^h to 6^h	Jan.	Nov./Dec.	Oct.	11–20
6^h to 9^h	Feb./Mar.	Jan.	Nov./Dec.	21–30
9^h to 12^h	Apr.	Feb./Mar.	Jan.	31–40
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Introduction

Think of this as your *working* sky atlas, the one you carry out to your backyard telescope or pack in luggage for a trip far from home. Today, amateur astronomers have abundant choices in the celestial charts they use. Some come in elegant multi-volume sets, a few have large sheets that unfold, and others run on a computer. But did you ever see a booklet of star maps so handy to use at the telescope?

The editors of *Sky & Telescope* magazine don't just write. Like amateurs everywhere, we go out at night to observe stars, planets, the occasional comet, and a profusion of deep-sky sights. In a half century we've published six major astronomical atlases, but this — our seventh — is the only one designed and prepared entirely in-house. We've paid close attention to features our readers have begged for in an atlas over the years.

Above all, we wanted this *Pocket Sky Atlas* to be convenient for use in the field at night. Charts on facing pages form a spread that spans 50° of sky, but you can also fold the book back on its spiral binding and hold it in one hand. For recognizing star patterns quickly, we've added "stick figures" for constellations — the same ones we've used in *S&T* since 1993. These green lines should help you find your way better than the official constellation boundaries (finely dotted lines).

The Milky Way is portrayed by a simple two-tone scheme in which a darker shade of blue marks the brighter core. These contours are adapted from the first (1981) edition of Wil Tirion's *Sky Atlas 2000.0.*

What the Atlas Shows

The 80 main charts contain 30,796 stars to visual magnitude 7.6, roughly five times as many as you can normally see with the naked eye. Because all these stars are readily visible in a low-power finderscope, they make helpful benchmarks and patterns for "star-hopping" to any object of interest.

Double and multiple stars are marked with a horizontal bar. For the purposes of this atlas, stars are considered double if they have a companion brighter than magnitude 10.5 that is resolvable in amateur telescopes within 30″ of the primary star, or a companion brighter than 8.5 within 200″.

Variable stars are shown with an outer ring to represent the star's brightness at maximum, and an inner dot to show the star's brightness at minimum (if that minimum is magnitude 7.6 or brighter). Only those stars that vary more than 0.5 magnitude are identified as variables here.

The selection criteria for nonstellar objects depend on the type. Virtually all the galaxies plotted are brighter than visual magnitude 11.5 and globular

clusters brighter than 10.5. Planetary nebulae, whose light is typically more concentrated and hence easier to see, are included if brighter than about 12. The light of an open star cluster tends to be spread over a generous patch of sky. Nearly every cluster we've included has an overall brightness exceeding that of an 8th-magnitude star, but a few dozen fainter clusters are included because they are rich or compact and just as easy to see.

The outlines of most bright nebulae, supernova remnants, and dark nebulae have been adapted and simplified from those drafted by E. Talmadge Mentall for the *Millennium Star Atlas.* Some of these objects, like the magnificent Simeis 147 at the Taurus-Auriga border, are difficult or impossible to see visually but rewarding to capture photographically.

We decided to include all objects in the Astronomical League's popular Herschel 400 observing list, even though a few of them would have been rejected by the selection criteria outlined above. For a special observing treat, try hunting down some of the 55 carbon stars identified by "(c)" in the atlas. Their vivid red hue can be quite striking in a large amateur telescope.

For more information about deep-sky objects of all kinds, and astronomy in general, consult the books and links in the Bibliography on page xi.

Understanding Labels

Many bright stars have a traditional name like Betelgeuse or Albireo. A larger number carry a Greek letter assigned by German cartographer Johann Bayer in 1603, or perhaps a roman letter (especially in the southern sky). For important stars not identified this way, we use the number applied by English astronomer John Flamsteed early in the 18th century (though many Flamsteed numbers for stars fainter than magnitude 5.5 are omitted to avoid clutter). Some special-interest objects have an astronomer's name and number attached, such as the fast-moving stars Groombridge 1830 and Lalande 21185.

Variable stars are marked with an upper-case letter (R through Z), two letters (such as UV or AD), or V followed by a number. The best-known double stars have their own special nomenclature, in which the prefix indicates the discoverer. The most common of these are Σ, for Wilhelm Struve; OΣ, Otto Struve; h, John Herschel; Δ, James Dunlop; and β, S. W. Burnham.

Throughout the atlas, *nonstellar* objects are labeled in *italics.* Most nonstellar objects are known by more than one designation, but just one is given in this atlas. The 109 objects in Charles Messier's famous deep-sky list have the prefix M, and this designation takes precedence over all others. Otherwise, by far the most common numbers are those from J. L. E. Dreyer's *New General Catalogue* (NGC) of 1888 or *Index Catalogue* (IC) of 1895 and 1908. We omit the prefix NGC throughout.

When an object has no M, NGC, or IC number, some other designation is given. For open star clusters, a frequent prefix is Cr (Collinder), Tr (Trumpler), or Mel (Melotte). Many bright nebulae have the prefix Ced (Cederblad), vdB (van den Bergh), or Sh2 (Sharpless). Dark nebulae often have an LDN (Lynds) or B (Barnard) number. In the case of planetary nebulae, PK means Perek-Kohoutek. While numbers from Patrick Moore's popular Caldwell catalog do not appear

in the atlas itself, their equivalent designations and chart numbers can be found in the special index on page xxiii.

Chart Arrangement
A novel feature of the atlas is its layout, illustrated on the inside back cover. Imagine the sky divided into eight gores, or lunes, running from the north celestial pole to the south. Each gore makes up a section of this book and covers a wide swath of sky passing directly overhead at a specific season of the year and time of night — as summarized on the Contents page and on the first page of that section. Therefore, the charts you'll find most useful on a given night tend to be close together in the atlas.

Within each section, chart numbers increase from north to south. From section to section, they increase from west to east. There are 10 charts per section. Notice that each north-circumpolar chart has a number ending in 1, and each south-circumpolar chart has a number ending in 0. Any chart that ends in 4, 5, 6, or 7 contains part of the celestial equator. Each chart has blue arrows in the margins, telling you the chart numbers of immediately adjacent regions.

All charts include some of the sky shown on adjoining charts, and between sections this overlap is especially generous in the polar regions. If an object lies near the outer margin on one chart, chances are excellent it will be well inside the margin on some other chart. Check the General Index on page xiii to find all the charts on which a named object appears.

Notice that the Big Dipper (Chart 32), Gemini (Chart 25), and the Great Square of Pegasus (Chart 74) are shown in their entirety. When you see how many other much-loved regions of the sky are just as well shown, you might wonder, "How could they be so lucky?" That's another secret of our chart layout! Rather than slice up the sky according to a rigid, mathematical plan, as in other atlases, we freely shifted the centers of individual charts a bit if it would help to keep important star patterns whole (while maintaining sufficient overlap between charts).

Some popular but very congested regions of the sky are shown in more detail on four close-up charts following Chart 80. These are the Pleiades, Orion's Sword, the center of what has been called the Realm of Galaxies in Virgo, and the Large Magellanic Cloud.

How This Atlas Came to Be
In the spring of 2000, fresh back at *S&T* from the Texas Star Party, Gary Seronik got the ball rolling by proposing a small-format version of Sky Publishing's best-selling *Sky Atlas 2000.0.* Within a few months he had generated test plots and convinced himself that, despite early doubts, we wouldn't have to give up a lot of faint stars and deep-sky objects, nor carve up the sky into chunks so small that the atlas would lose its usefulness in the field.

Independently, Joshua Roth was showing other editors his "dissected" copy of *Sky Atlas 2000.0.* As we kicked ideas around, I recalled my earliest days on the staff and a half-serious comment by then-editor Joseph Ashbrook. Referring to a popular book-format atlas of the time, he said it would benefit greatly by having its numerous pages of printed tables and reference material excised, leaving just the handy set of charts!

Soon Richard Tresch Fienberg, Tony

Flanders, and Alan M. MacRobert — experienced observers all — joined our brainstorming sessions. Sky Publishing's Books & Products team of Paul Deans, Benjamin F. Jackson, and Kerri A. Williams launched the project in earnest with the enthusiastic support of president/publisher Susan B. Lit.

I went to work tailoring the magazine's star-charting software to the needs of this project and refining the selection criteria for stars and deep-sky objects. As soon as I could generate the actual computer plots, Gregg Dinderman brought cartographer Martin Gamache of Alpine Mapping Guild in on the project, and together they crafted the beautifully finished charts you see here. With valued input from Sandra Salamony, Gregg also designed the book, inside and out. Derek W. Corson, Sally MacGillivray, and Dominic Taormina handled countless administrative and production details and coordinated the printing by DS Graphics of Lowell, Massachusetts.

If you have any kind of telescope, you *must* have a first-rate sky atlas or you will never get very far in astronomy. Other fine atlases exist, but we think this one may come closest to meeting your night-by-night needs.

Roger W. Sinnott

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Tirion, W., and R. W. Sinnott, *Sky Atlas 2000.0,* 2nd edition, Cambridge, MA, 1998: Sky Publishing Corp. and Cambridge University Press.

Helpful Links

Astronomical League, *The Herschel 400 Club Observing List,* astroleague.org/al/obsclubs/herschel/hers400.html

Mason, B. D., G. L. Wycoff, and W. I. Hartkopf, *Washington Double Star Catalog,* ad.usno.navy.mil/wds/wds.html

Night Sky magazine, NightSkyMag.com

Sky & Telescope magazine, SkyandTelescope.com

Guide to Constellations

After each constellation's name is its standard three-letter abbreviation (in parentheses). This is followed by the chart(s) on which the constellation, or at least an important part of it, is shown. Note that Serpens has two sections.

Andromeda (And), 3, 72
Antlia (Ant), 37, 38, 39
Apus (Aps), 40, 50, 60, 70
Aquarius (Aqr), 75, 76
Aquila (Aql), 64, 65, 66
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Auriga (Aur), 12
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Eridanus (Eri), 6, 16, 17, 19
Fornax (For), 6, 8, 17, 19
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Hercules (Her), 52, 54
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Hydrus (Hyi), 10, 20
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Lepus (Lep), 16
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Pisces (Psc), 5, 74
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Pyxis (Pyx), 26, 28, 39
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Telescopium (Tel), 68, 69
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Triangulum Australe (TrA), 60
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Ursa Minor (UMi), 41, 51
Vela (Vel), 28, 39
Virgo (Vir), 44, 45, 46, 47, C
Volans (Vol), 30
Vulpecula (Vul), 62, 64

Greek Letters on Charts

By tradition, the bright stars in each constellation are marked with lowercase Greek letters. A constellation's most brilliant star is often called α, but there are exceptions. For example, Gemini's brightest star is β and that of Octans is ν.

α	Alpha	ε	Epsilon	ι	Iota	ν	Nu	ρ	Rho	φ	Phi
β	Beta	ζ	Zeta	κ	Kappa	ξ	Xi	σ	Sigma	χ	Chi
γ	Gamma	η	Eta	λ	Lambda	ο	Omicron	τ	Tau	ψ	Psi
δ	Delta	θ	Theta	μ	Mu	π	Pi	υ	Upsilon	ω	Omega

Charts 1–10

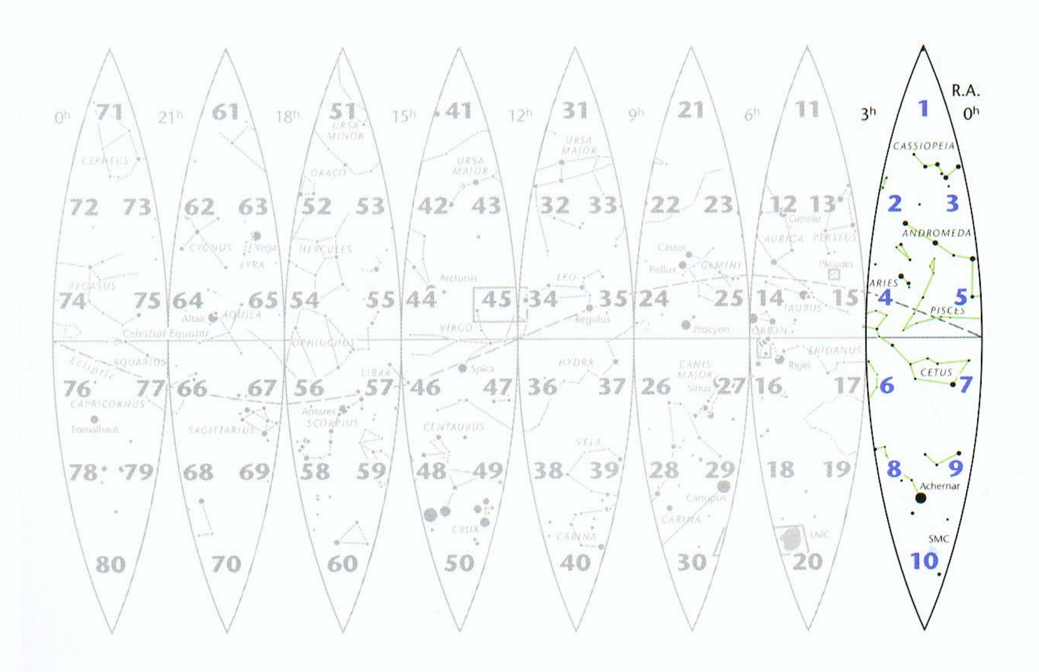
Right Ascension 0^h to 3^h

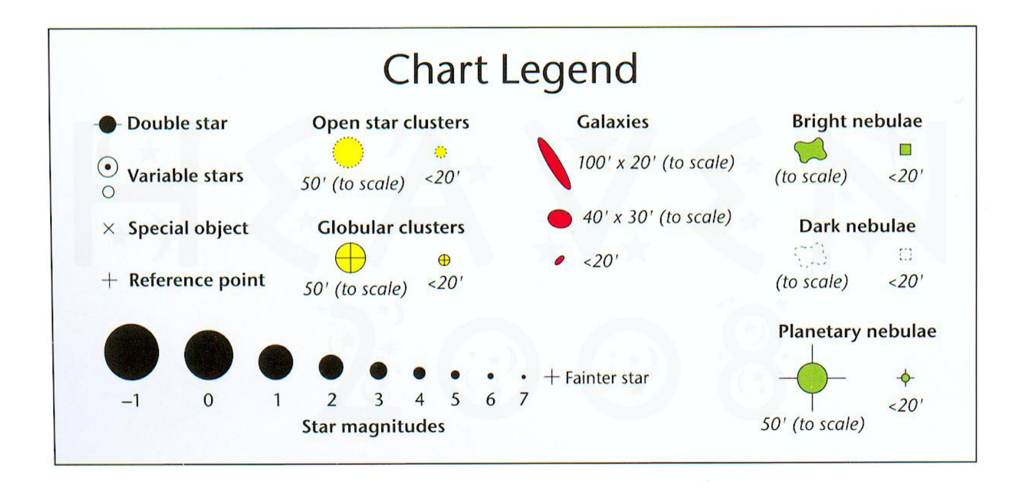
This section is highest in the night sky around these times:

Evening: November & December

Midnight: October

Morning: August & September




Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1 0 1 2 3 4 5 6 7
Fainter star
Star magnitudes

10h 11h 12h 13h 14h 15h 16h 17h
18h
19h
20h
21h
+70°
+60°
2h 1h

URSA MINOR
DRACO
CAMELOPARDALIS
CEPHEUS
CASSIOPEIA
PERSEUS

North Celestial Pole
Polaris
Errai
Ruchbah
Schedar
Caph
Double Cluster

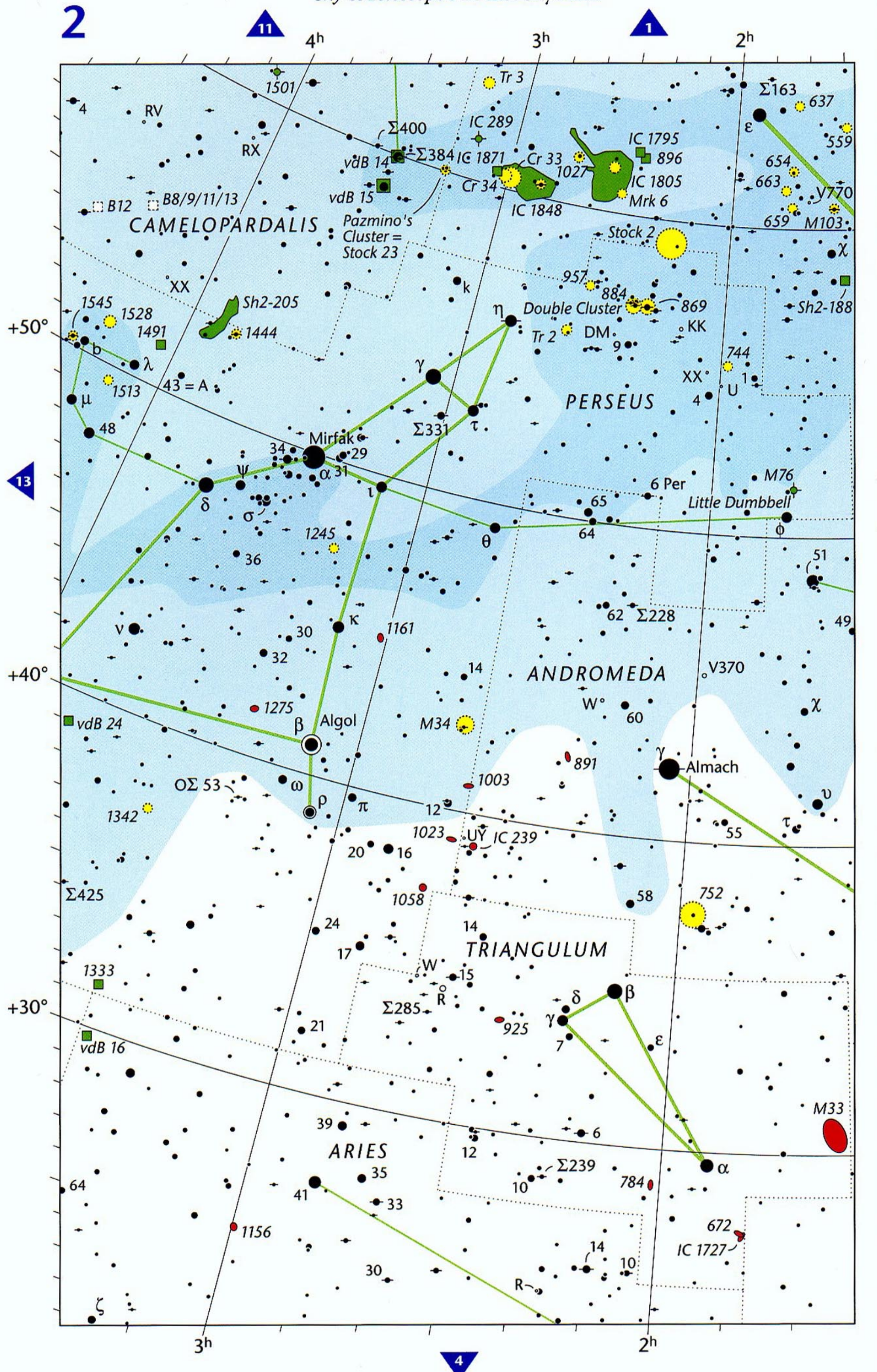
2715
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2146
1560
IC 356
IC 342
188
AR
S(c)
EI
Σ460
SS
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RX
X
RZ
vdB 8
Cr 463
V393
7822
Ced 214
Σ3053
Σ163
637
559
7790
Tr 3
IC 289
IC 1871
Cr 34
1027
IC 1795
896
Cr 33
IC 1848
IC 1805
Mrk 6
654
663
V770
659
M103
381
IC 59
IC 63
225
136
129
IC 10
TV
vdB 1
Σ3062
Stock 2
957
884
869
Tr 2
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V465
Sh2-188
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CAMELOPARDALIS
PERSEUS
ANDROMEDA
TRIANGULUM
ARIES
Mirfak
Algol
Almach
Double Cluster
Little Dumbbell
Pazmino's Cluster = Stock 23
Stock 2
M34
M33
M76
M103
Sh2-205
Sh2-188
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+40°
+30°
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1 71 72 5

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+50° +40° +30°

CASSIOPEIA

LACERTA

ANDROMEDA

PISCES

PEGASUS

Ruchbah

Caph

Schedar

Mirach

Alpheratz

Andromeda Galaxy

M31

M110

M32

206

EG

M52

Bubble Nebula, 7635

Sh2-157

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IC 1470

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M103

V770

637

559

225

136

381

IC 59

IC 63

129

7790

IC 10

TV

vdB 1

Σ3062

7789

436

457

V465

Sh2-188

281

Bradley 3077

V509

KY

SV

R

7686

Z

TU

185

147

278

RV

Blue Snowball

7662

7640

Σ3050

404

V343

315

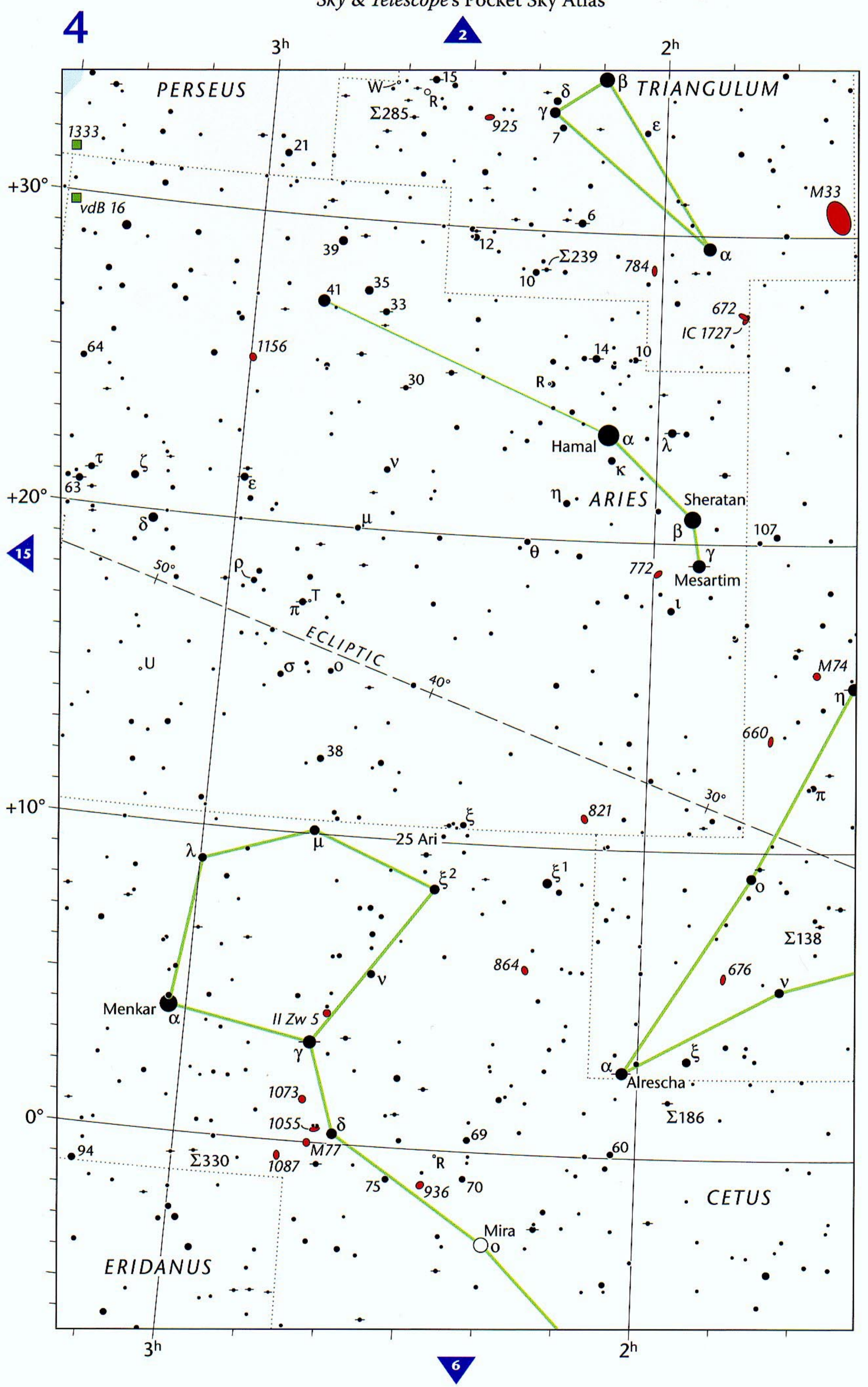
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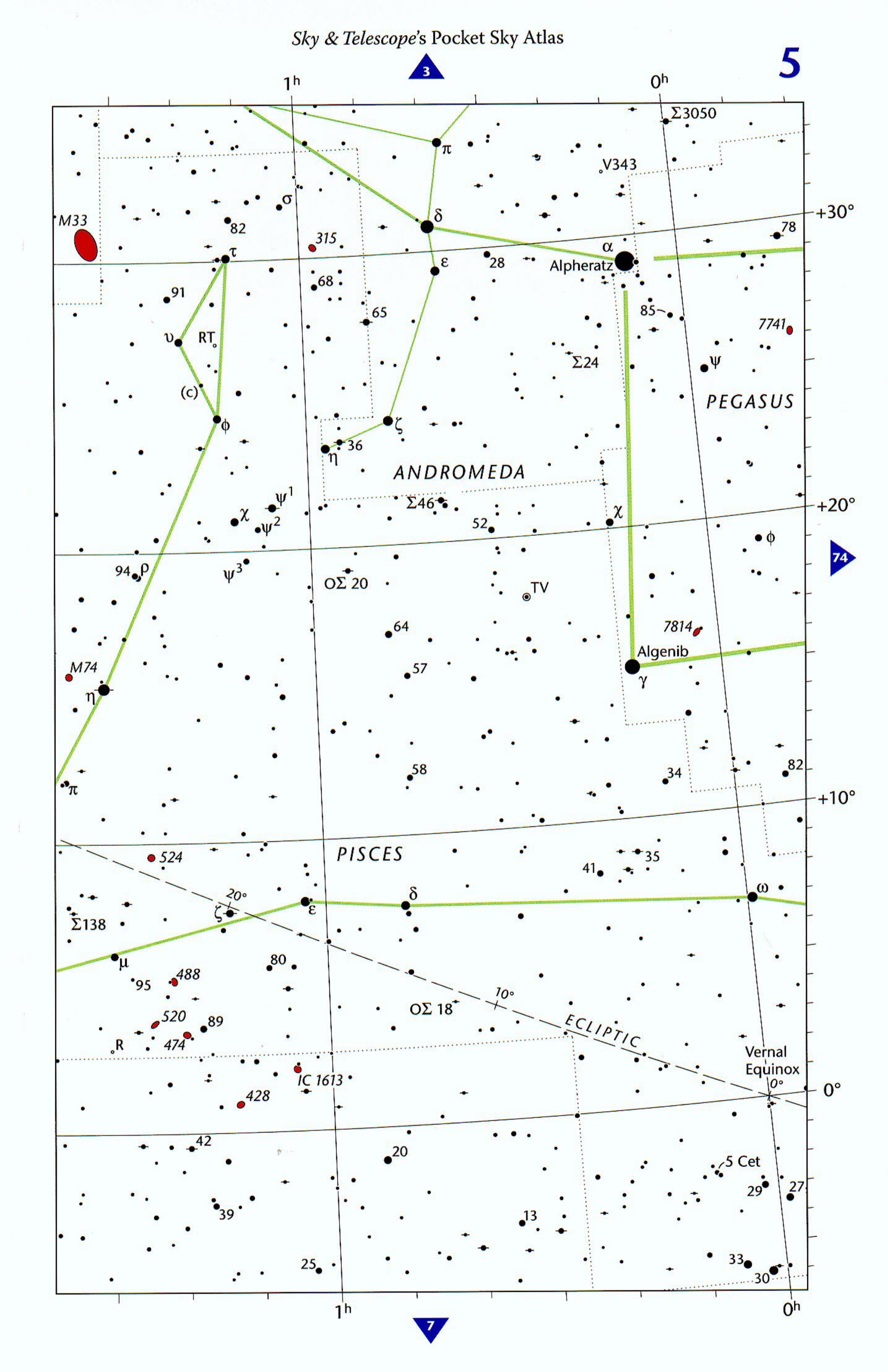
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(c)



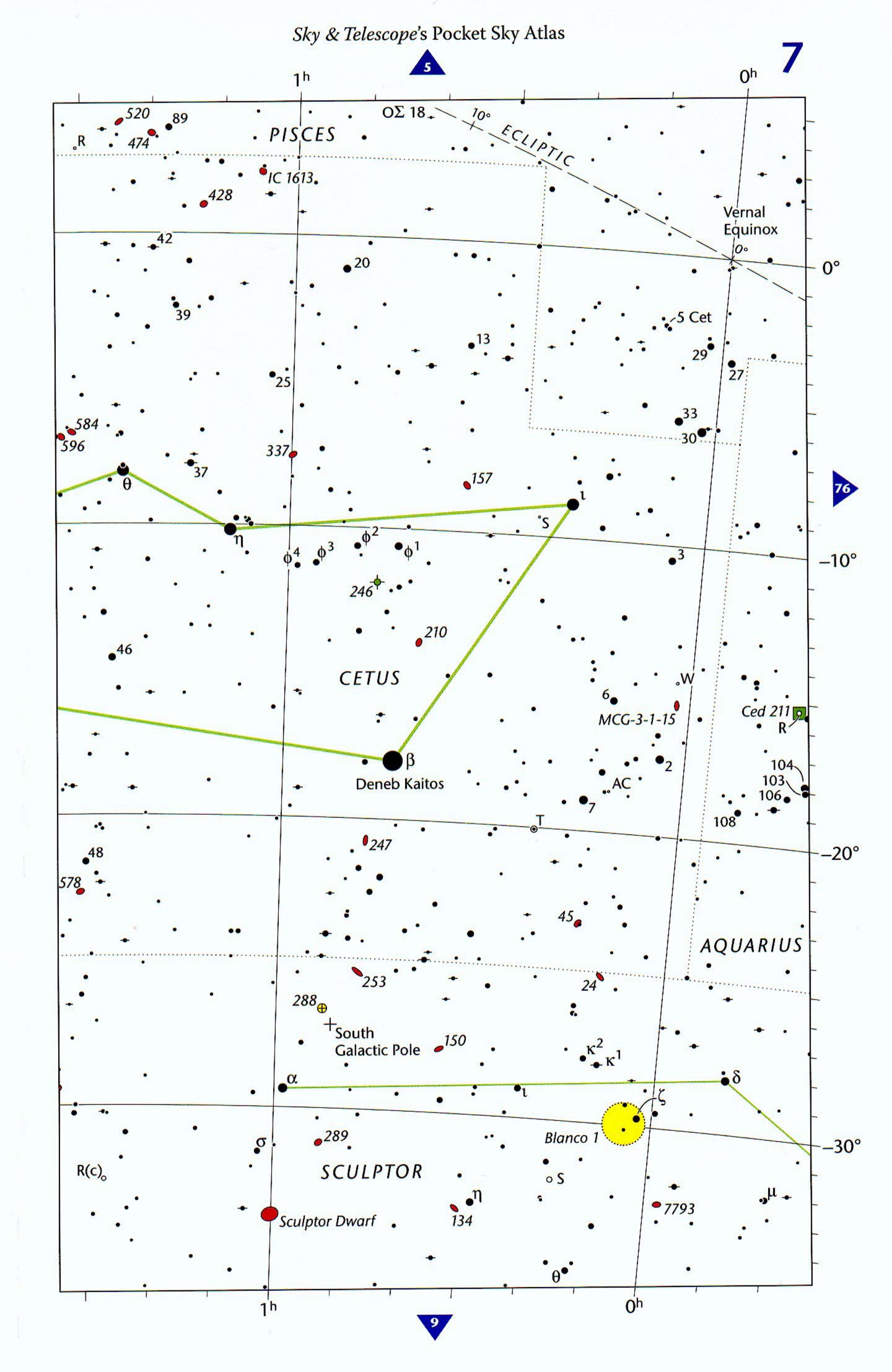
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Alrescha
Mira
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M74
M77
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Σ285
Σ239
Σ138
Σ186
Σ330
IC 1727
II Zw 5
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672
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772
660
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864
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1052
1042
988
720
908
1300
1232
578
1187
1255
1302
1201
613
1097
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474
R
IC 1613
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Vernal
Equinox
0°
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337
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φ4
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246
210
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CETUS
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104
103
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108
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247
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578
45
AQUARIUS
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24
288
South
Galactic Pole
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Blanco 1
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σ
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SCULPTOR
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Sculptor Dwarf
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3h 2h

ERIDANUS

τ4 1187 15 τ3 4 γ1 R(c) ε

ζ 1255 1201 1302 ω ν 613

γ2 ε π τ μ

ι2 ι1 α 1097 π

FORNAX

–30° β φ 1344 λ2 λ1 Fornax Dwarf

η3 η1 η2

19

1350 1374 1379 χ2 χ1 1380 1387 1326 1399 1317 1427 χ3 1404 1316 = Fornax A 1386 1365

ψ 986 ι 625

h Acamar θ φ

1291 s χ y

–40° EU h3556 ψ

1411 κ δ 1448

ERIDANUS

U 1493 1433 R ι φ χ

T 685 q2 1527 1494 η q1

HOROLOGIUM

IC 1954 1249 ζ Δ5 = p Eri

–50° γ 1261 Achernar α h3592

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1566 1549 V λ 1617 1553 1533 1596 1546 μ α

α RETICULUM

1574 1543

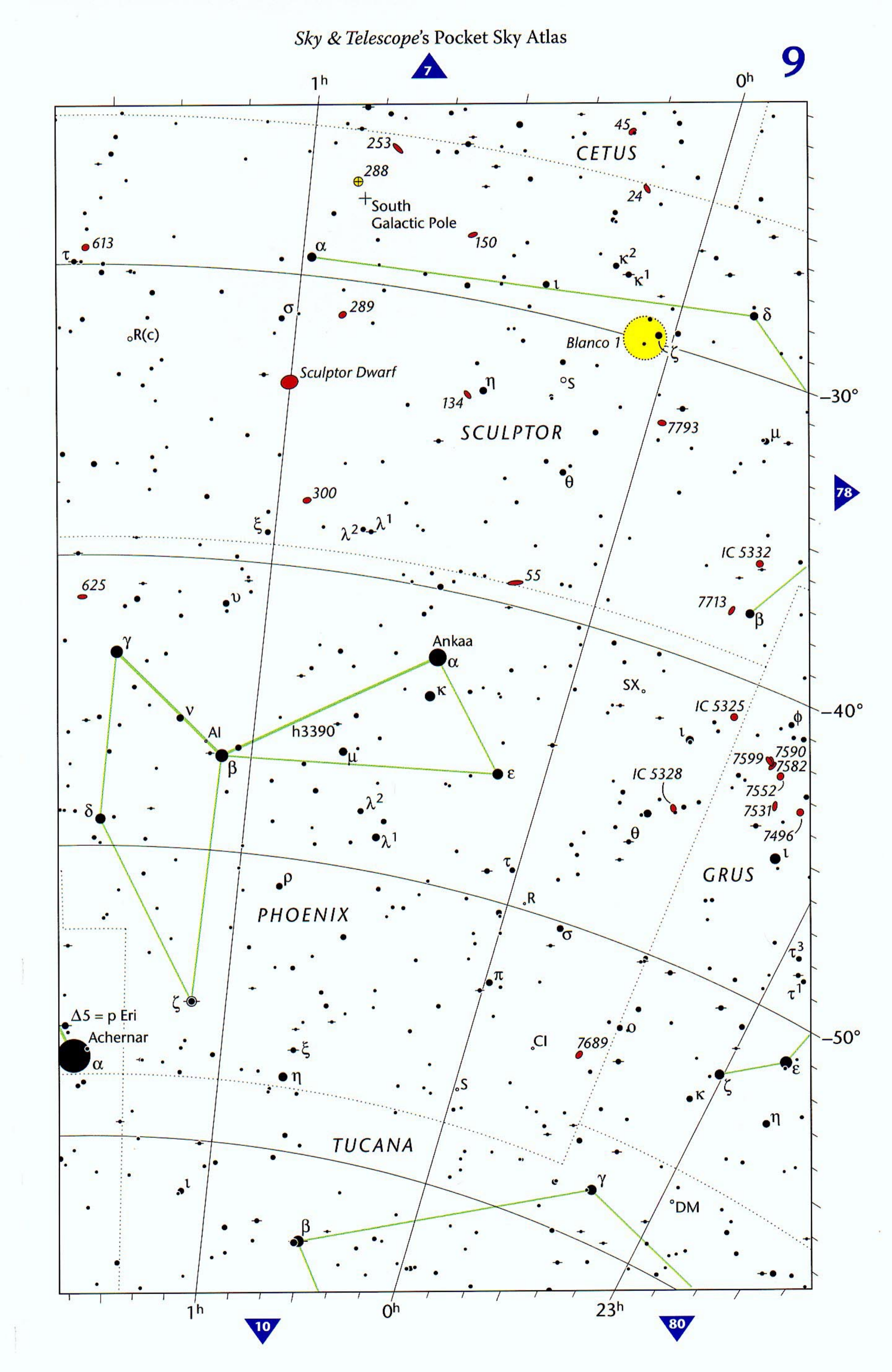
DORADO ν ζ2 γ ε ζ1

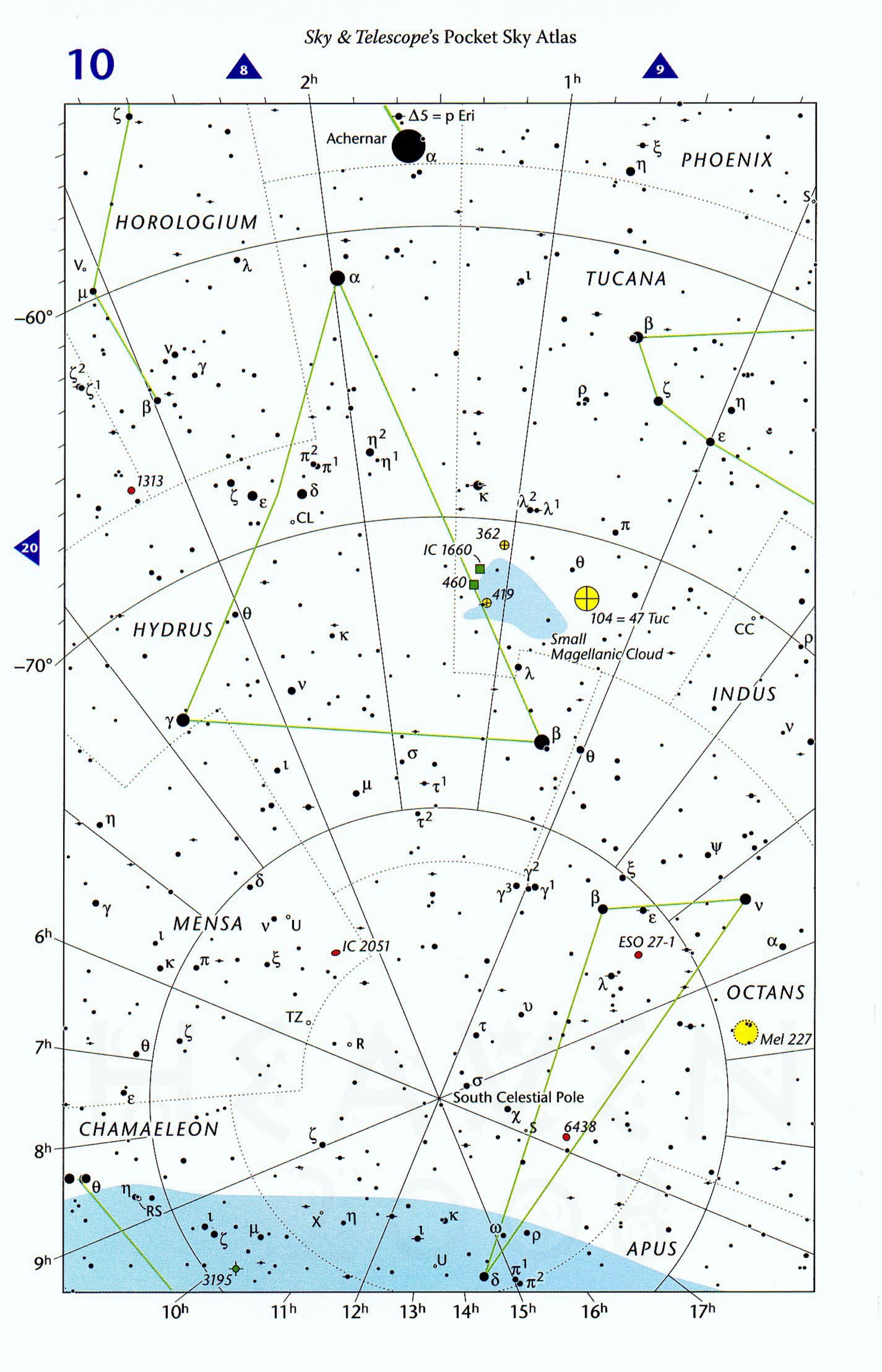
ι δ κ β

4h 3h 2h

20

10


CETUS
SCULPTOR
PHOENIX
GRUS
TUCANA
South
Galactic Pole
Sculptor Dwarf
Blanco 1
Ankaa
Achernar
Δ5 = p Eri
h3390
1h
0h
23h
–30°
–40°
–50°
7
78
10
80


8
9
20
2h
1h
Δ5 = p Eri
Achernar
PHOENIX
HOROLOGIUM
TUCANA
−60°
1313
CL
362
IC 1660
460
419
104 = 47 Tuc
Small
Magellanic Cloud
CC
HYDRUS
−70°
INDUS
MENSA
U
IC 2051
ESO 27-1
6h
OCTANS
TZ
R
Mel 227
7h
South Celestial Pole
S
6438
CHAMAELEON
8h
RS
APUS
U
9h
3195
10h
11h
12h
13h
14h
15h
16h
17h

Charts 11–20

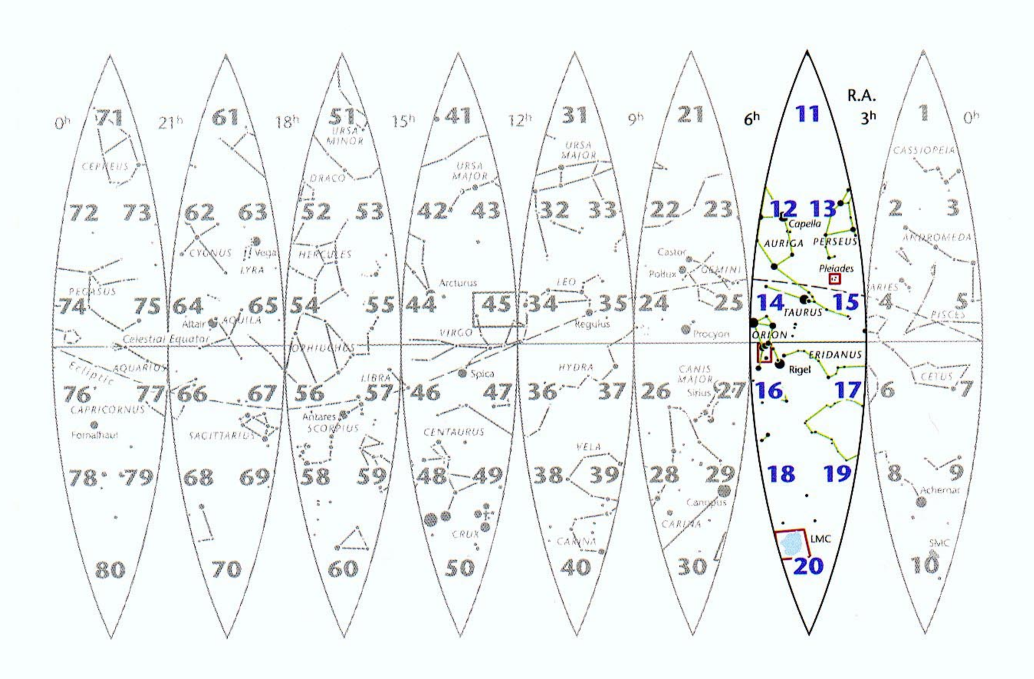
Right Ascension 3^h to 6^h

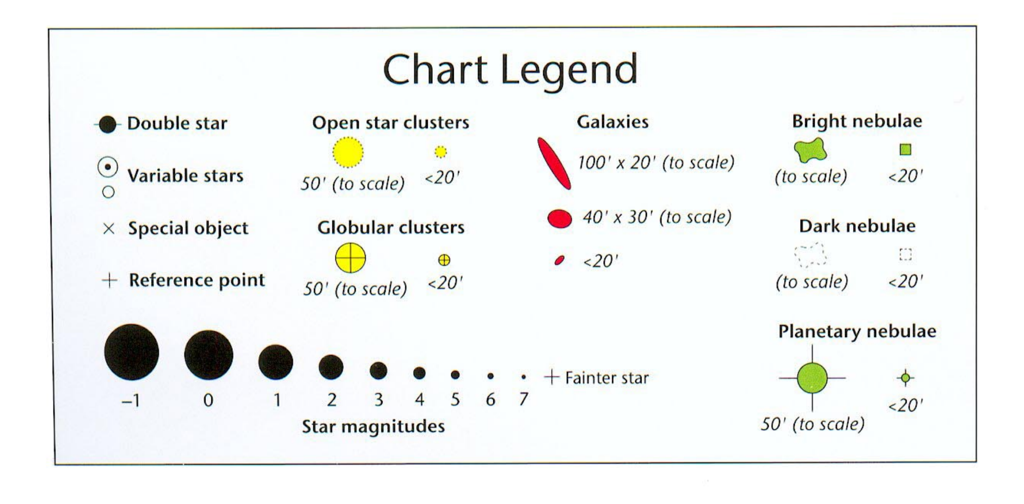
This section is highest in the night sky around these times:

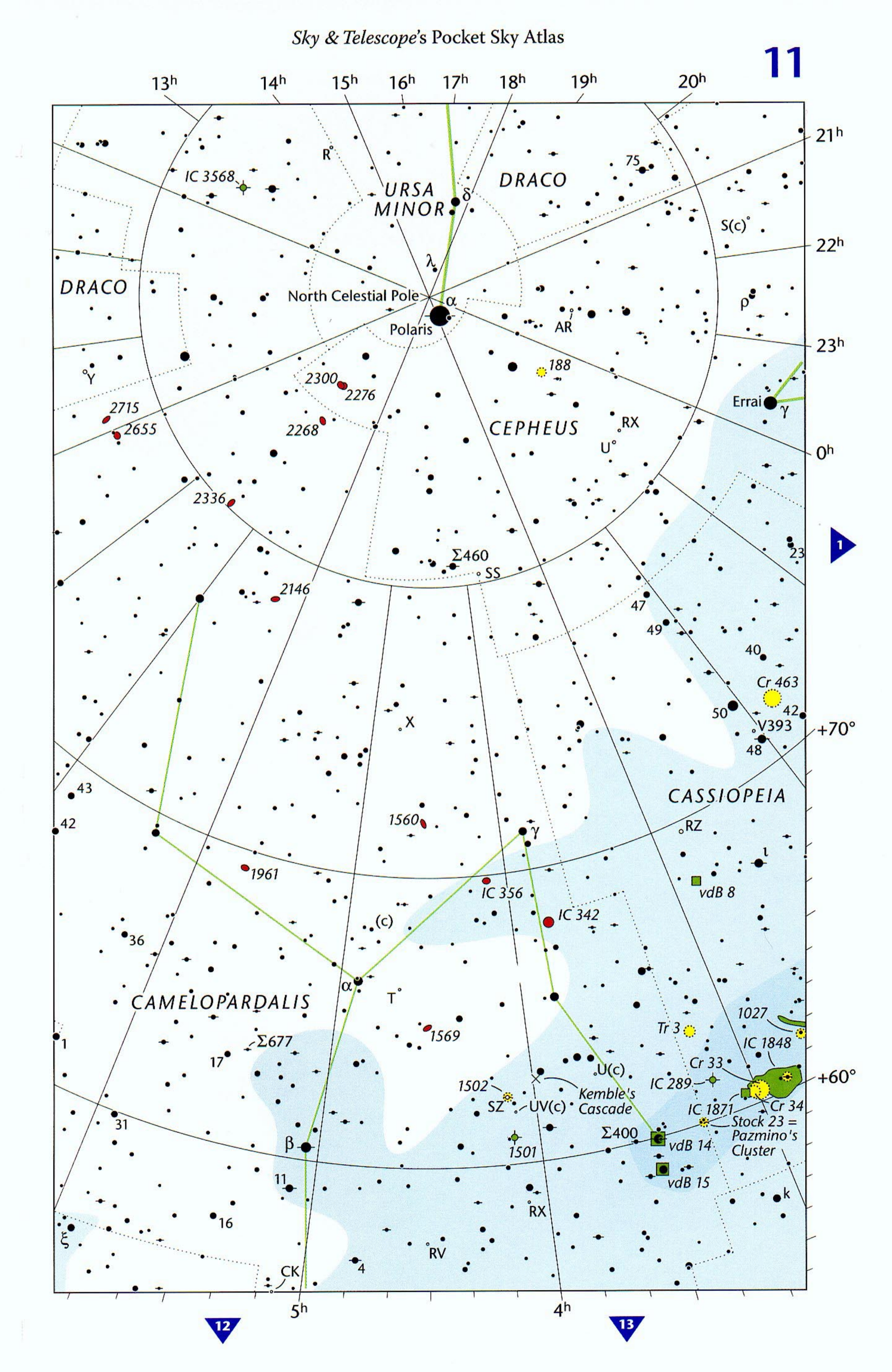
Evening: **January**

Midnight: November & December

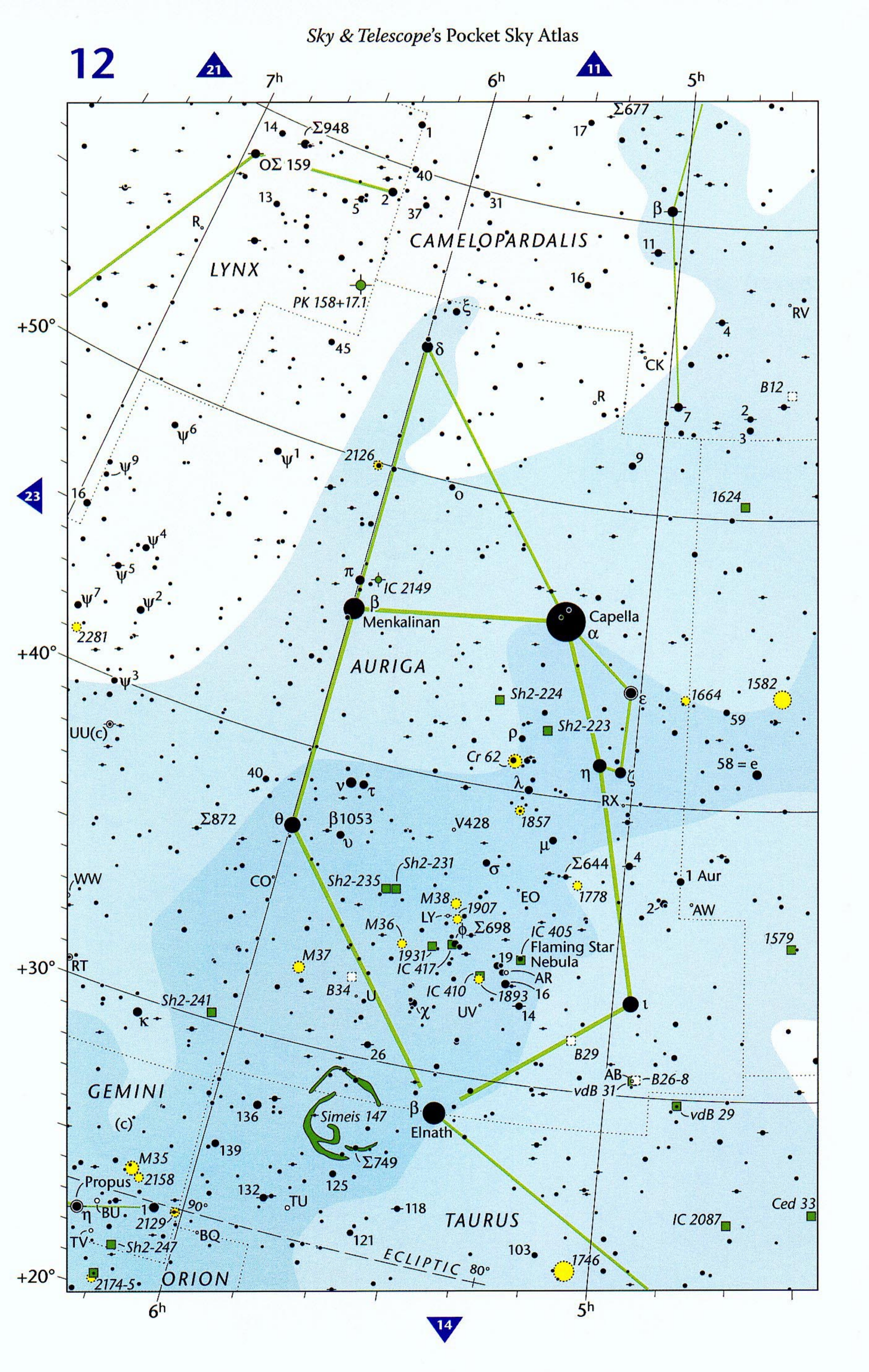
Morning: October

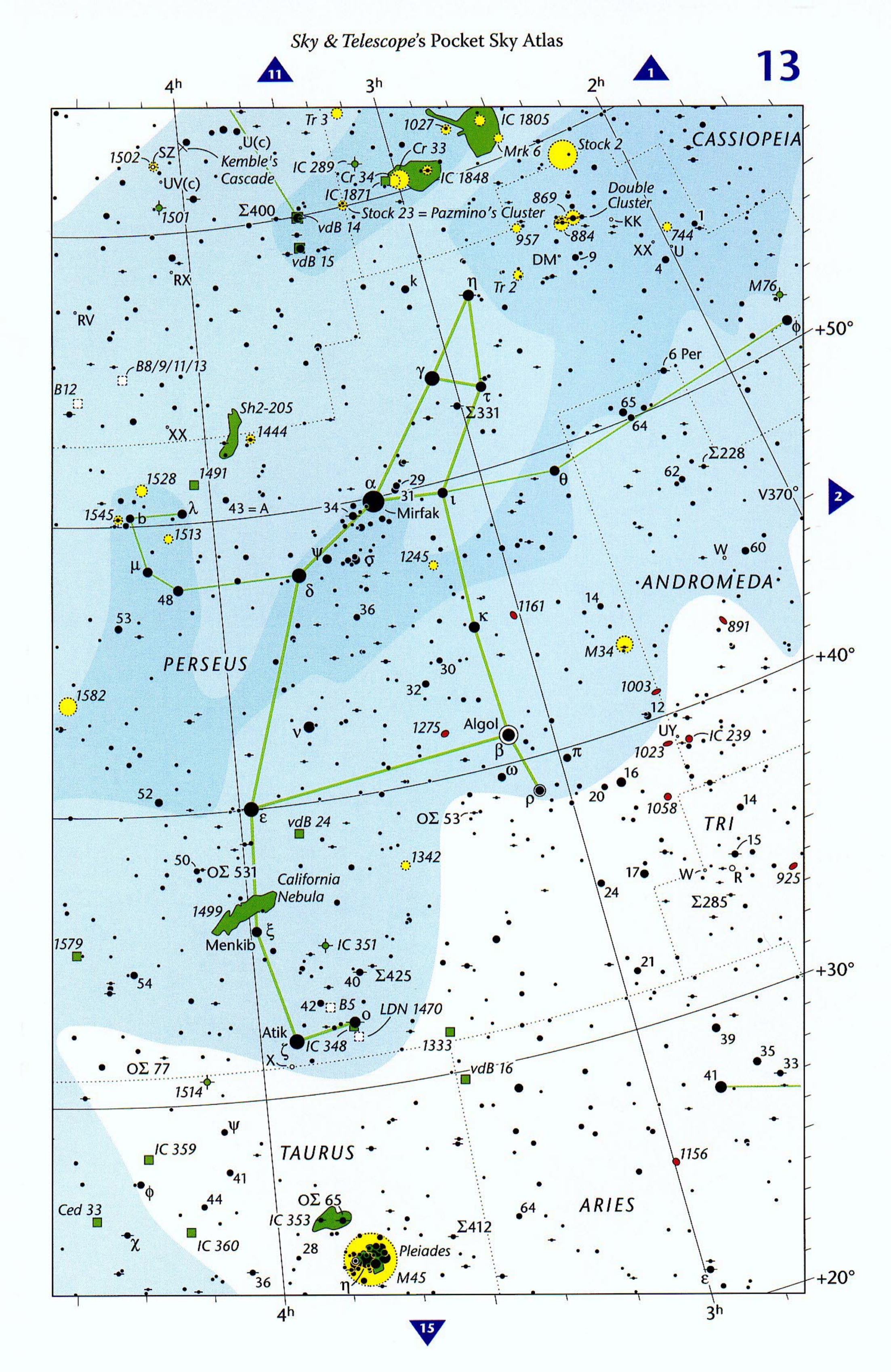


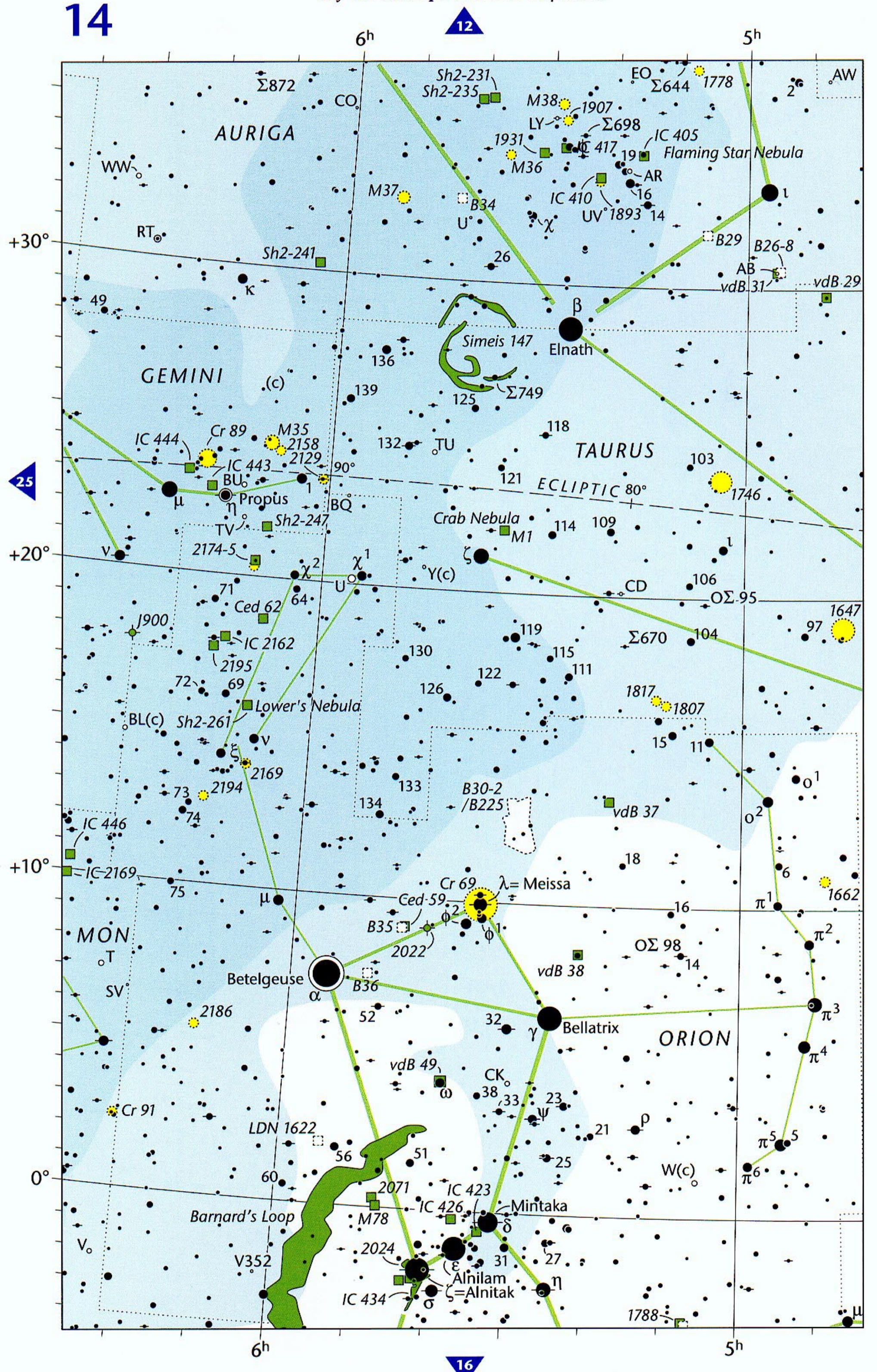

Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1 0 1 2 3 4 5 6 7
Fainter star
Star magnitudes



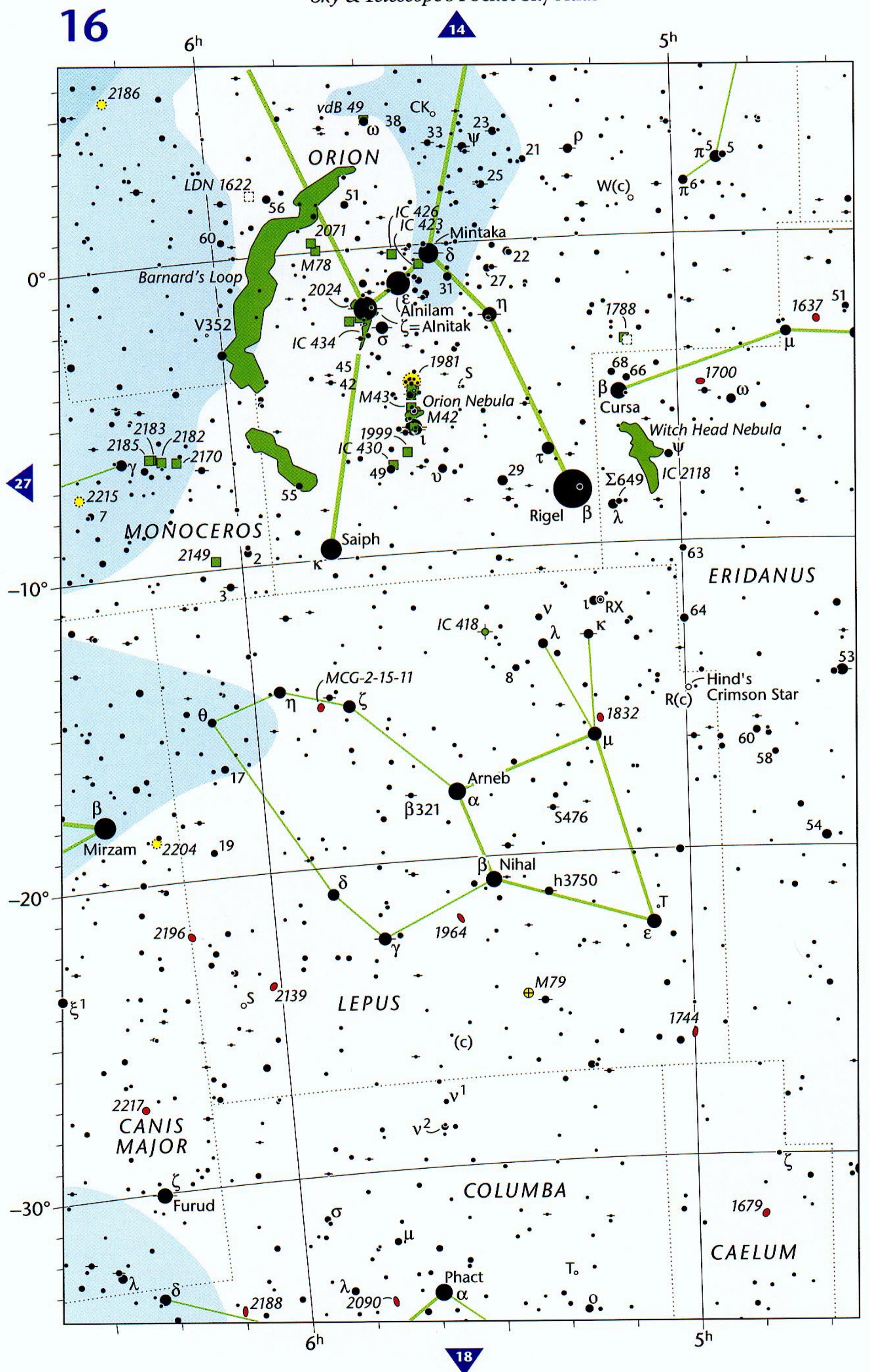
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
23h
0h
URSA MINOR
DRACO
DRACO
CEPHEUS
CASSIOPEIA
CAMELOPARDALIS
North Celestial Pole
Polaris
Errai
IC 3568
2300
2276
2268
2715
2655
2336
2146
188
Σ460
SS
Cr 463
V393
+70°
1560
1961
IC 356
IC 342
vdB 8
1027
IC 1848
Cr 33
IC 289
Tr 3
1569
Σ677
1502
Kemble's Cascade
SZ
UV(c)
U(c)
IC 1871
Cr 34
Stock 23 = Pazmino's Cluster
+60°
Σ400
vdB 14
vdB 15
1501
RX
RV
CK
5h
4h
12
13
1

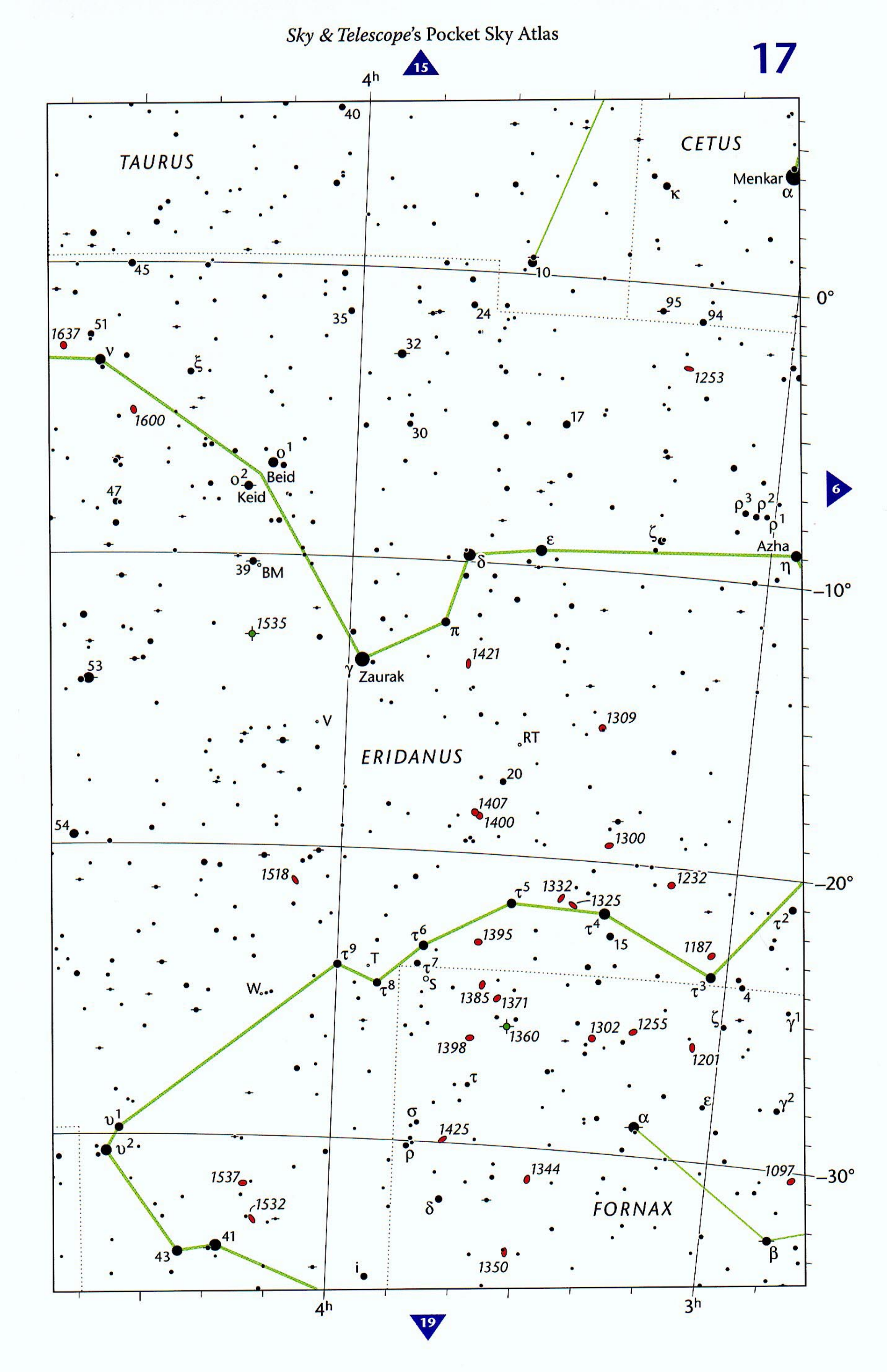

21
11
23
14
7h
6h
5h
+50°
+40°
+30°
+20°
LYNX
CAMELOPARDALIS
AURIGA
GEMINI
TAURUS
ORION
ECLIPTIC
80°
90°
Σ948
OΣ 159
Σ677
PK 158+17.1
Capella
α
Menkalinan
β
Elnath
δ
ξ
π
θ
ε
η
ζ
ι
ρ
λ
μ
σ
ν
τ
υ
φ
χ
κ
o
β1053
Σ872
Σ644
Σ698
Σ749
IC 2149
IC 405
Flaming Star
Nebula
IC 410
IC 417
IC 2087
Sh2-224
Sh2-223
Sh2-231
Sh2-235
Sh2-241
Sh2-247
Cr 62
M38
M36
M37
M35
Simeis 147
vdB 31
vdB 29
Ced 33
B12
B29
B26-8
B34
1 Aur
58 = e
2126
2281
1857
1907
1931
1893
1778
1664
1582
1624
1579
1746
2158
2129
2174-5
V428
RX
EO
AW
AR
AB
UV
LY
CO
WW
RT
UU(c)
(c)
RV
CK
R
U
TU
BU
BQ
TV
Propus
ψ1
ψ2
ψ3
ψ4
ψ5
ψ6
ψ7
ψ9

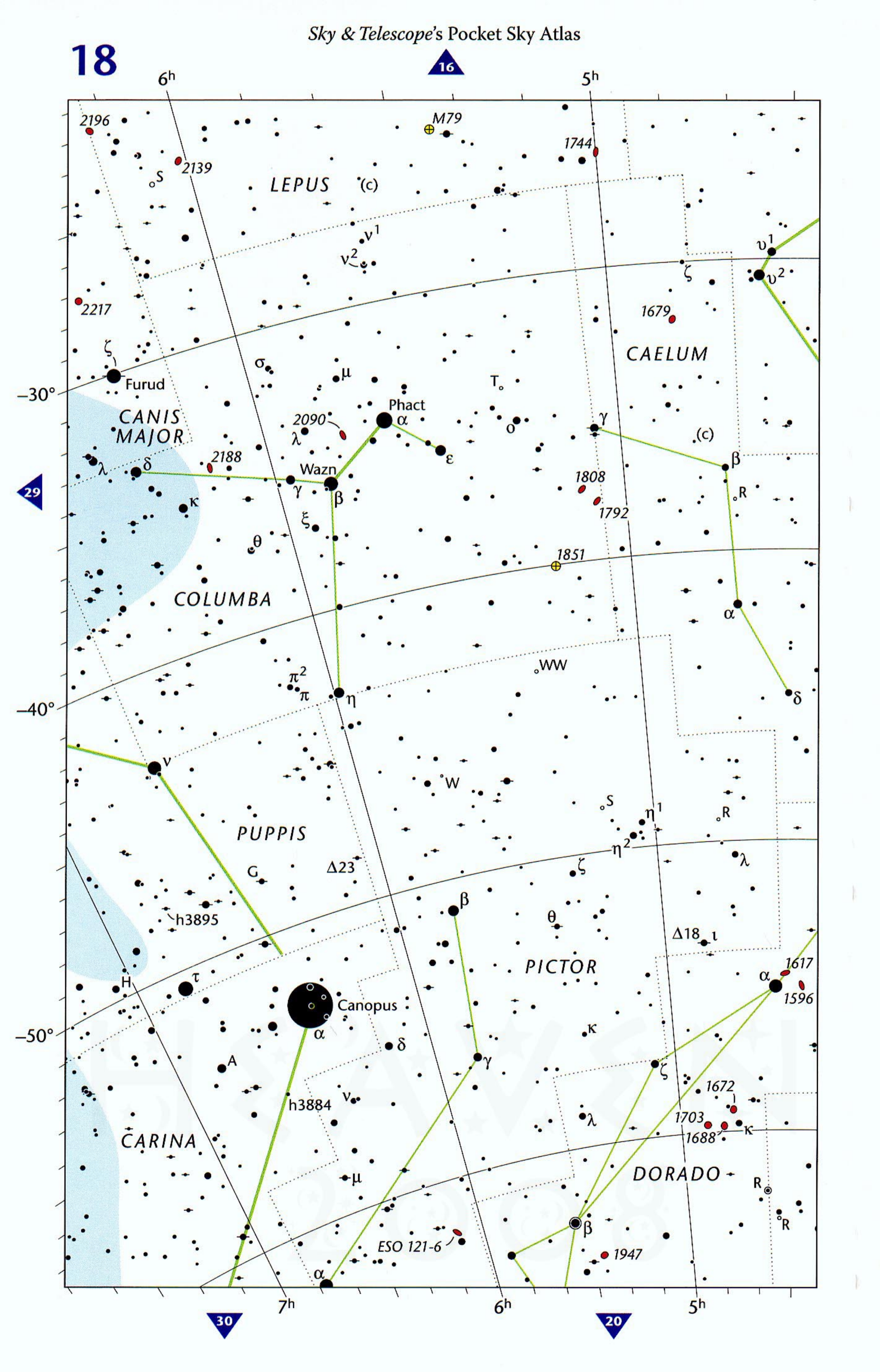

CASSIOPEIA
PERSEUS
ANDROMEDA
TRI
TAURUS
ARIES
Double Cluster
Kemble's Cascade
Stock 23 = Pazmino's Cluster
Mirfak
Algol
California Nebula
Menkib
Atik
Pleiades
M45
M34
M76
+50°
+40°
+30°
+20°

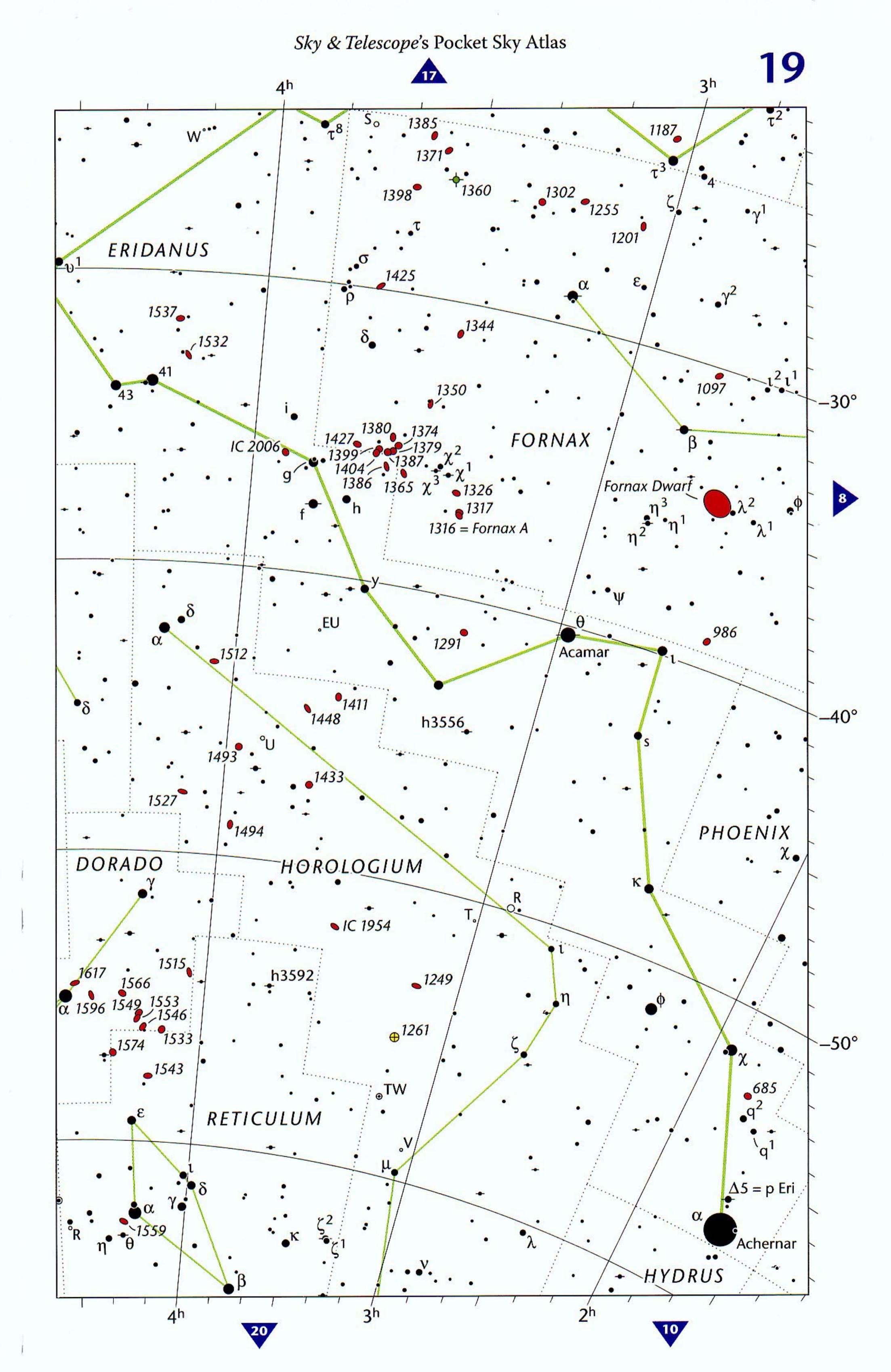

12
6h
5h
AURIGA
GEMINI
TAURUS
ORION
MON
ECLIPTIC
Elnath
Propus
Betelgeuse
Bellatrix
Mintaka
Alnilam
ζ=Alnitak
λ= Meissa
Simeis 147
Flaming Star Nebula
Crab Nebula
Lower's Nebula
Barnard's Loop
M35
M36
M37
M38
M1
M78
+30°
+20°
+10°
0°
25
16

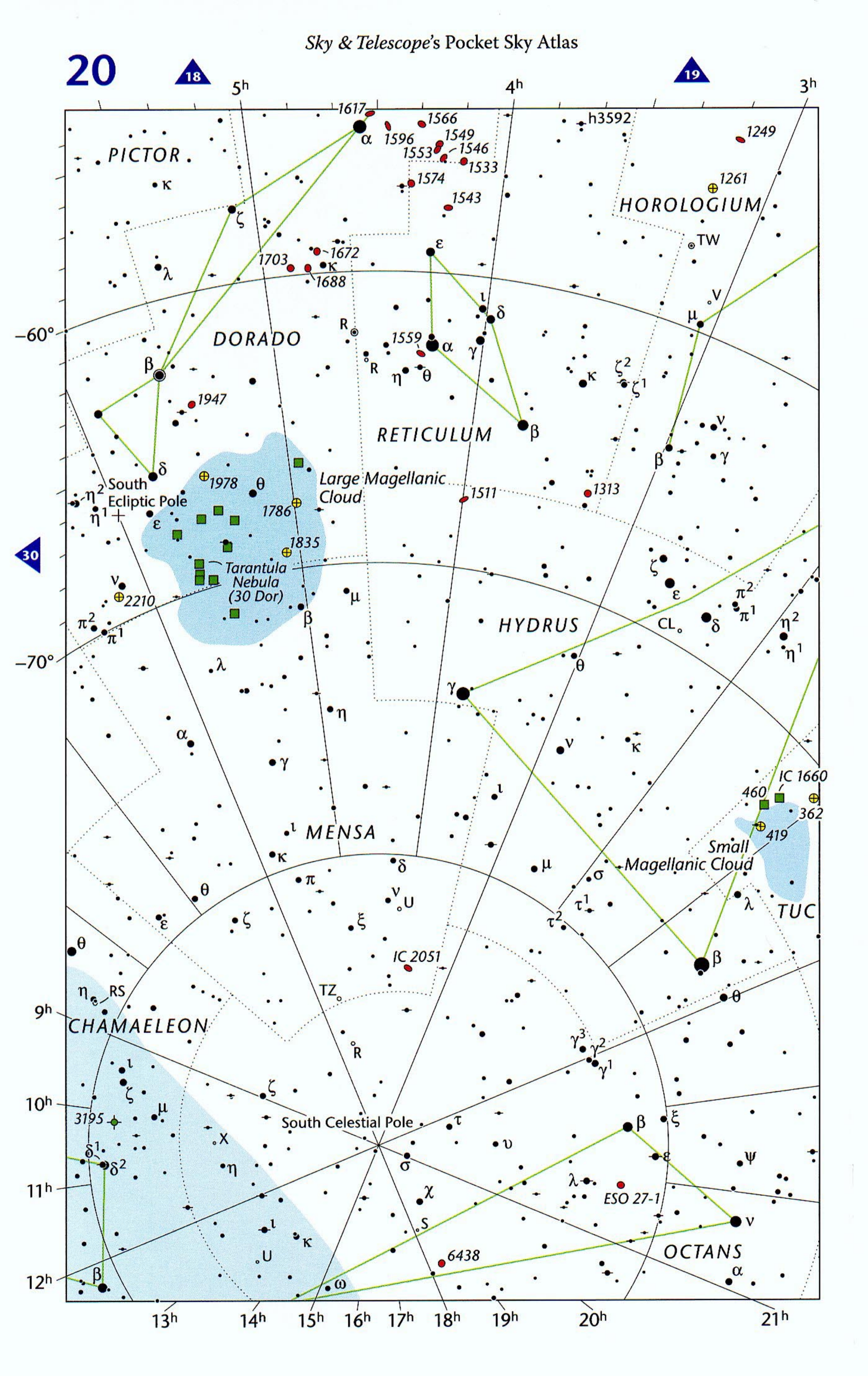
4h
3h
PERSEUS
California Nebula
1499
Menkib
IC 351
Σ425
1579
54
40
42
B5
IC 348
Atik
LDN 1470
1333
ΟΣ 77
+30°
1514
vdB 16
vdB 29
IC 359
41
1156
Ced 33
44
ΟΣ 65
IC 2087
IC 353
64
ARIES
Σ412
IC 360
36
M45
Pleiades
Ced 34
37
70°
56
53
63
+20°
60°
HU
Be 84
1554-5
43
1647
Hind's Variable Nebula
ECLIPTIC
50°
TAURUS
Aldebaran
55
Hyades
75
81
80
70
71
58
ΟΣ 82
83
5
90
79
93
30
4
+10°
1662
R
vdB 26
88
47
66
46
29
CETUS
40
0°
10
95
94
45
24
35
1253
ERIDANUS
1637
51
32
4h
17


14
6h
5h
ORION
MONOCEROS
ERIDANUS
LEPUS
CANIS MAJOR
COLUMBA
CAELUM
Barnard's Loop
Mintaka
Alnilam
Alnitak
Orion Nebula
Saiph
Rigel
Cursa
Witch Head Nebula
Hind's Crimson Star
Arneb
Nihal
Mirzam
Furud
Phact
M42
M43
M78
M79
vdB 49
LDN 1622
IC 426
IC 423
IC 434
IC 430
IC 418
IC 2118
MCG-2-15-11
0°
−10°
−20°
−30°
27
18


15
4h
40
TAURUS
CETUS
Menkar
α
κ
45
10
0°
95
94
35
24
1637
51
ν
32
ξ
1253
1600
17
30
ο1
Beid
ο2
Keid
47
6
ρ3
ρ2
ρ1
ζ
ε
Azha
δ
η
39
BM
−10°
1535
π
1421
53
γ
Zaurak
V
1309
RT
ERIDANUS
20
1407
1400
54
1300
1518
1232
−20°
1332
1325
τ5
τ4
τ2
τ6
1395
15
1187
τ9
T
τ7
τ8
S
τ3
4
W
1385
1371
ζ
γ1
1360
1302
1255
1398
1201
τ
ε
σ
α
γ2
υ1
1425
υ2
ρ
1344
1097
−30°
1537
1532
δ
FORNAX
41
43
β
i
1350
4h
3h
19


16
6h
5h
M79
2196
1744
2139
LEPUS
(c)
CAELUM
CANIS MAJOR
Furud
Phact
Wazn
2090
2188
1808
1792
1679
1851
2217
COLUMBA
WW
PUPPIS
PICTOR
Δ23
Δ18
h3895
Canopus
h3884
CARINA
DORADO
ESO 121-6
1617
1596
1672
1703
1688
1947
-30°
-40°
-50°
29
7h
6h
5h
30
20


ERIDANUS
FORNAX
PHOENIX
DORADO
HOROLOGIUM
RETICULUM
HYDRUS
Fornax Dwarf
1316 = Fornax A
Acamar
Achernar
Δ5 = p Eri
IC 2006
IC 1954
h3556
h3592
4h
3h
2h
–30°
–40°
–50°
17
8
20
10


Sky & Telescope's Pocket Sky Atlas
20
18
19
30
5h
4h
3h
PICTOR
DORADO
RETICULUM
HOROLOGIUM
HYDRUS
MENSA
CHAMAELEON
OCTANS
TUC
Large Magellanic Cloud
Tarantula Nebula (30 Dor)
Small Magellanic Cloud
South Ecliptic Pole
South Celestial Pole
h3592
TW
CL
RS
TZ
IC 1660
IC 2051
ESO 27-1
1617
1566
1596
1549
1553
1546
1533
1249
1574
1261
1543
1672
1703
1688
1559
1947
1978
1786
1511
1313
1835
2210
460
362
419
3195
6438
–60°
–70°
9h
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h

Charts 21–30

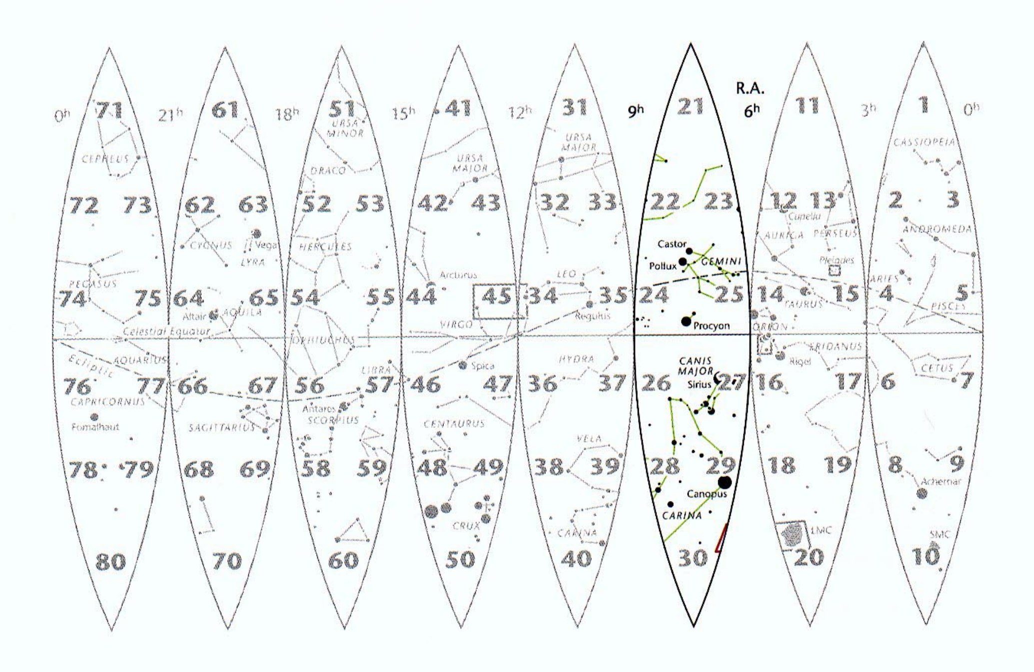
Right Ascension 6^h to 9^h

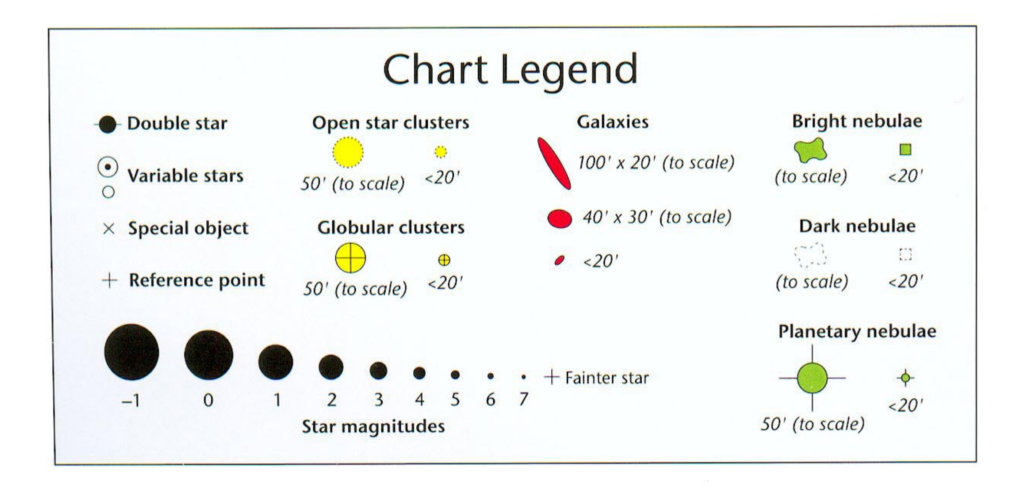
This section is highest in the night sky around these times:

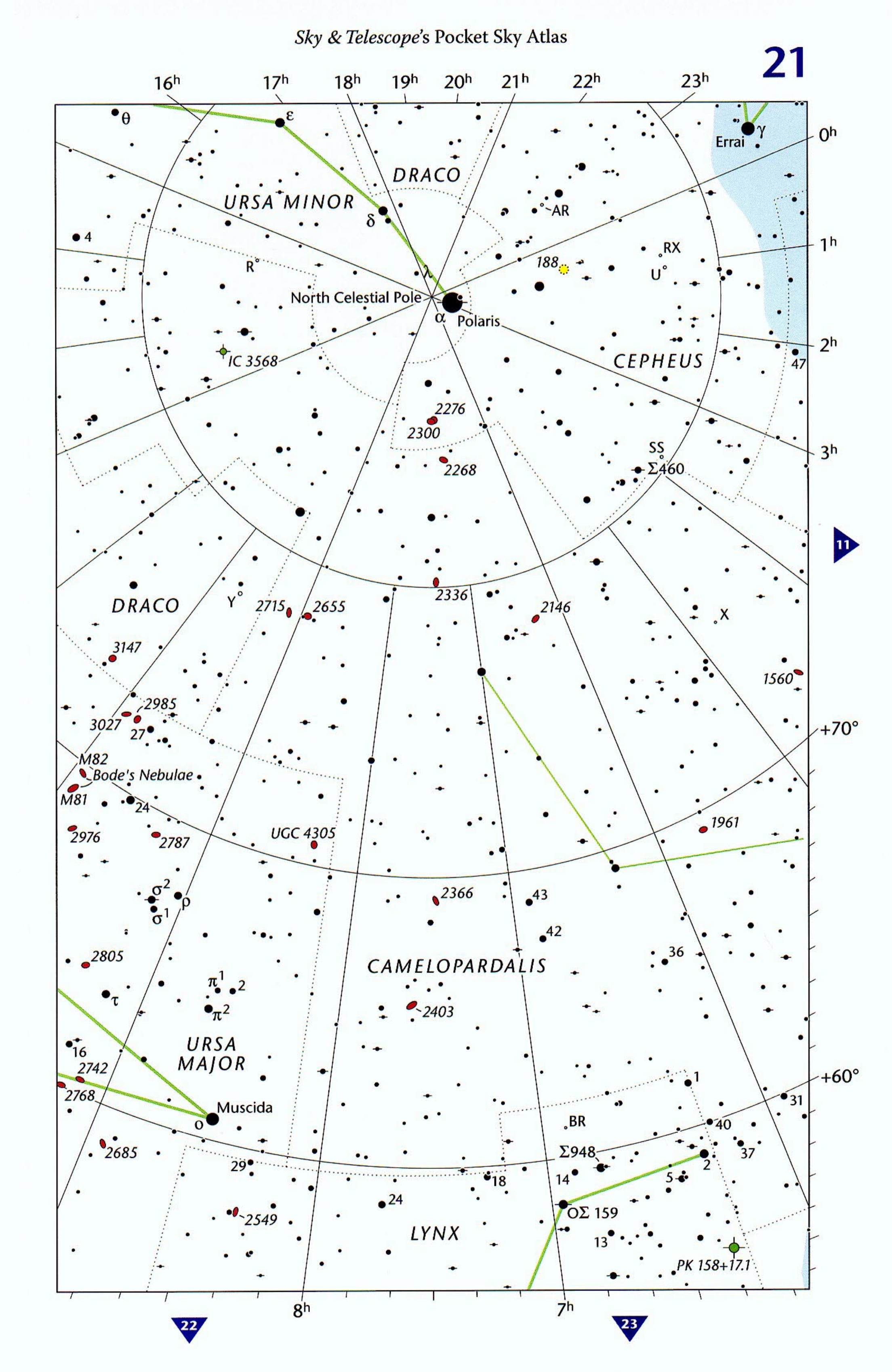
Evening: February & March

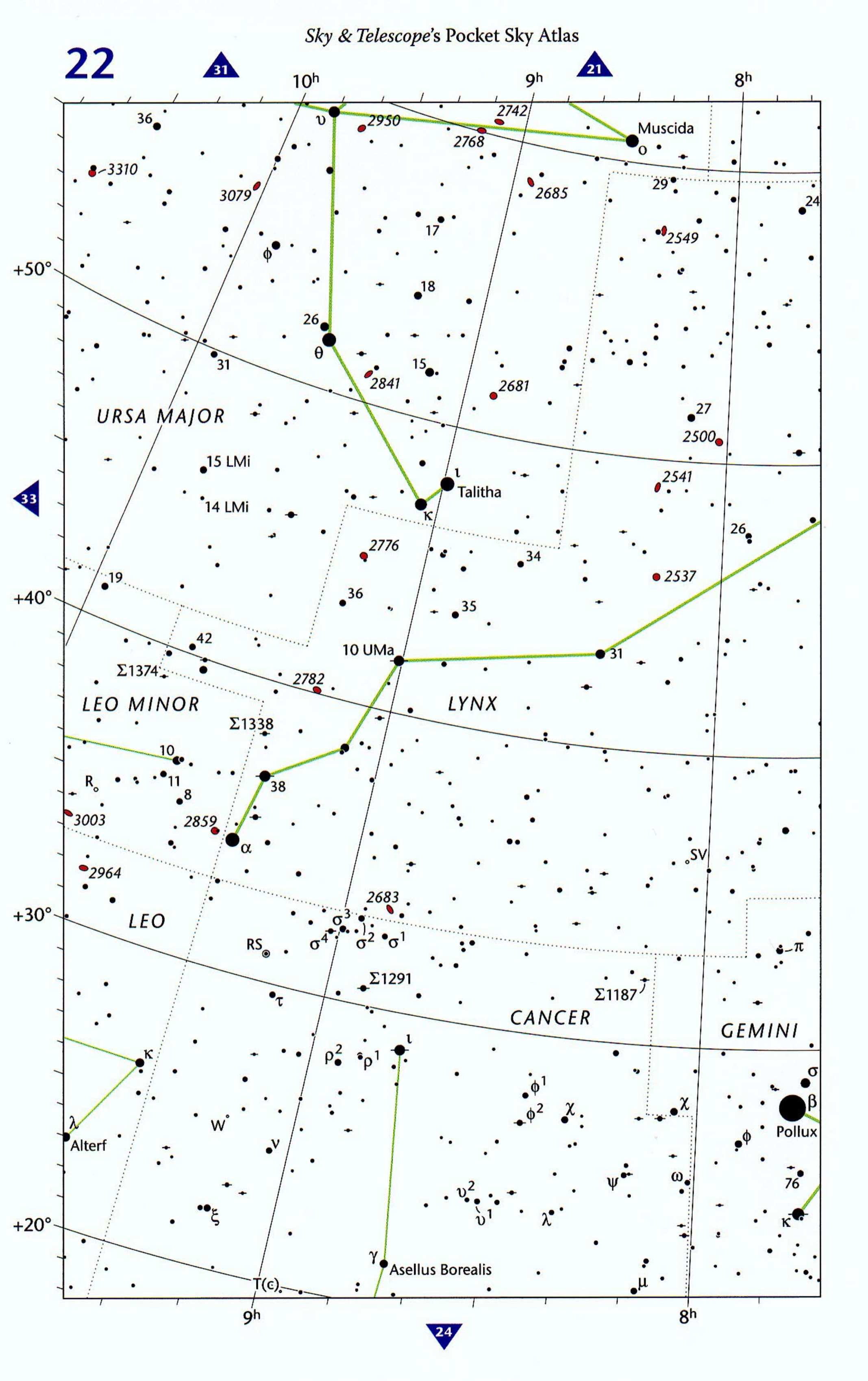
Midnight: January

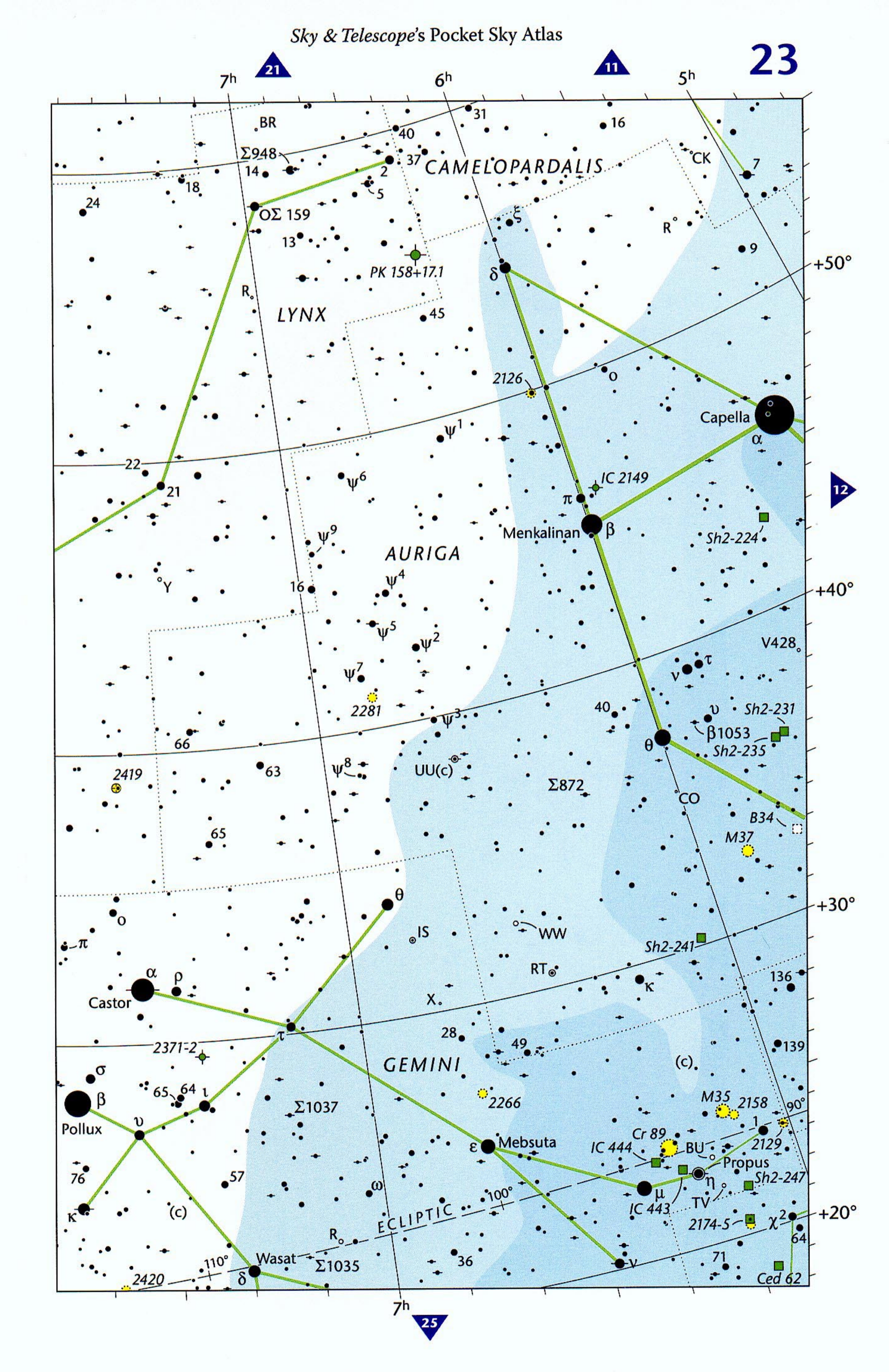
Morning: November & December



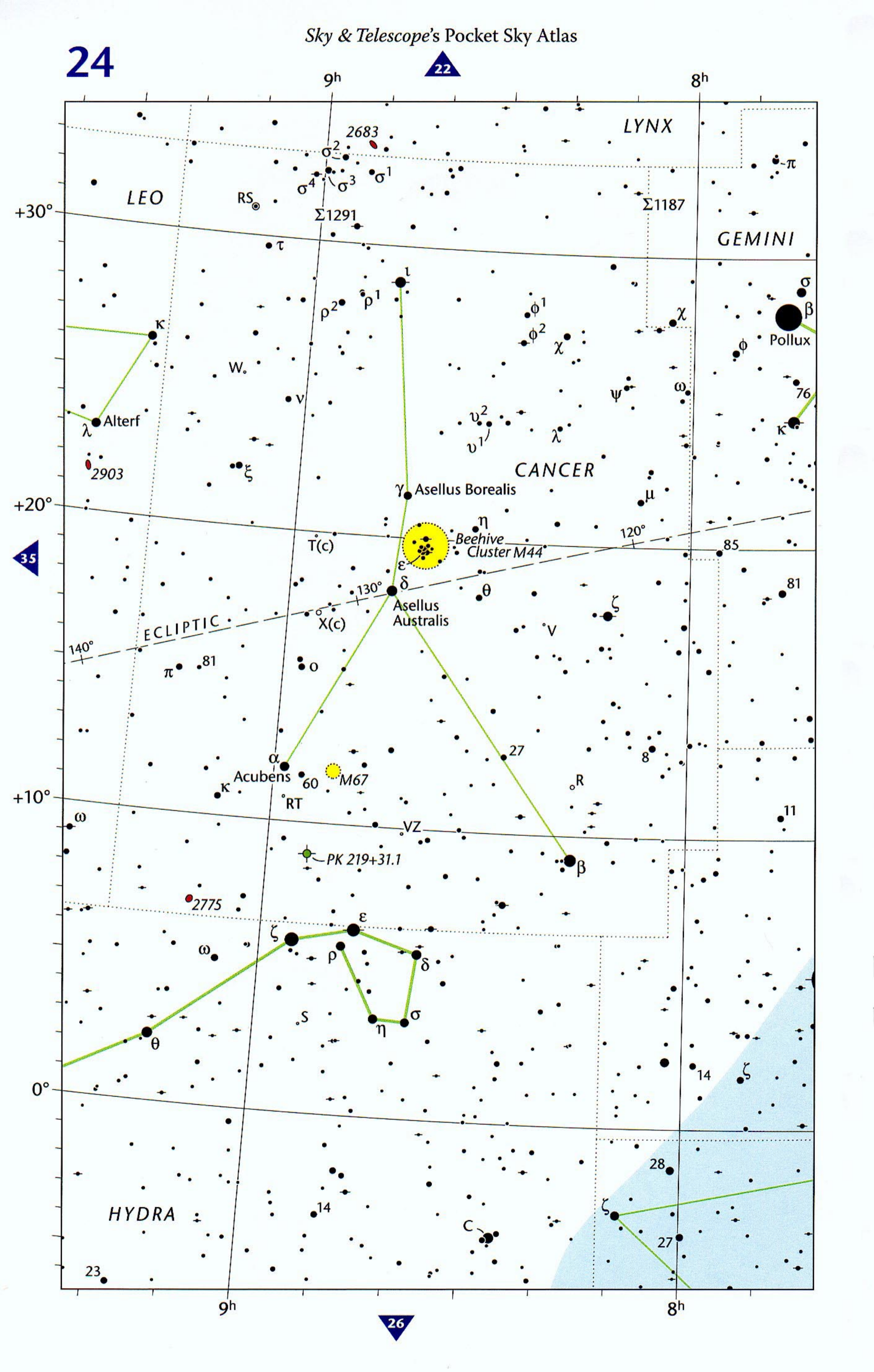

Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1 0 1 2 3 4 5 6 7
Fainter star
Star magnitudes


16h
17h
18h
19h
20h
21h
22h
23h
0h
1h
2h
3h
+70°
+60°
8h
7h
DRACO
URSA MINOR
North Celestial Pole
Polaris
CEPHEUS
Errai
IC 3568
2276
2300
2268
2336
SS
Σ460
DRACO
2715
2655
2146
3147
2985
3027
M82
Bode's Nebulae
M81
1560
1961
UGC 4305
2976
2787
2366
2805
CAMELOPARDALIS
2403
URSA
MAJOR
2742
2768
Muscida
2685
BR
Σ948
OΣ 159
2549
LYNX
PK 158+17.1
11
22
23


31
21
10h
9h
8h
+50°
+40°
+30°
+20°
33
24
URSA MAJOR
LEO MINOR
LYNX
LEO
CANCER
GEMINI
Muscida
Talitha
10 UMa
15 LMi
14 LMi
Σ1374
Σ1338
Σ1291
Σ1187
Pollux
Alterf
Asellus Borealis
2742
2950
2768
3310
3079
2685
2549
2841
2681
2500
2541
2776
2537
2782
3003
2859
2964
2683
RS
SV
T(c)



21
11
12
25
7h
6h
5h
+50°
+40°
+30°
+20°
CAMELOPARDALIS
LYNX
AURIGA
GEMINI
ECLIPTIC
Capella
Menkalinan
Castor
Pollux
Mebsuta
Propus
Wasat
Σ948
OΣ 159
PK 158+17.1
2126
IC 2149
Sh2-224
V428
Sh2-231
β1053
Sh2-235
Σ872
UU(c)
CO
B34
M37
2281
2419
WW
IS
RT
Sh2-241
2371-2
Σ1037
2266
M35
2158
2129
Cr 89
IC 444
BU
IC 443
TV
Sh2-247
2174-5
Ced 62
Σ1035
2420
90°
100°
110°


22
9h
8h
LYNX
LEO
GEMINI
CANCER
HYDRA
2683
Σ1291
Σ1187
RS
+30°
+20°
+10°
0°
Pollux
Alterf
2903
Asellus Borealis
Beehive Cluster M44
Asellus Australis
ECLIPTIC
120°
130°
140°
T(c)
X(c)
Acubens
M67
RT
VZ
PK 219+31.1
2775
35
26

23

7h 6h

+30° +20° +10° 0°

AURIGA

GEMINI

ORION

CANIS MINOR

MONOCEROS

ECLIPTIC

Castor α ρ o π
τ θ IS WW X RT
2371-2 σ β Pollux 64 65 ι υ
Σ1037 28 49 κ 136 139 (c)
2266 M37 Sh2-241
76 κ (c) 57 ω ε Mebsuta
M35 2158 2129 Cr 89 IC 444 IC 443 BU 1 90° BQ
100° R Propus η μ
TV Sh2-247
110° Wasat 63 2420 Σ1035 36 δ
2392=Eskimo Nebula Mekbuda ζ 56
ν 2174-5 χ² U 64
71 Ced 62
81 74 BN 68
2304 26 J900 IC 2162 2195
γ Alhena 72 69
λ 51 45
Lower's Nebula Sh2-261 ν
W Σ932 BL(c) ξ 2169
2355 2395 PK 205+14.1 Medusa Nebula
30 38 ξ 73 2194 74
B37-9 IC 446 IC-2169
6 1 11
2264 2247 Cone Nebula 15 2245 75 μ
R(c)
Hubble's Variable Nebula
ε γ S ΟΣ 170 V
2261 2251
Gomeisa β η 17 2254 IC 448 T 13 SV
Σ1126 RV Cr 111 Cr 97
2186
Procyon α Cr 106 2237-8/46
2252 2244
Cr 107 Rosette Nebula
δ³ δ² δ¹ Cr 96 Cr 91
18 V505 Sh2-282
2324 2301 2282 Do-25
21 δ
V
2286
25 IC 466 (c) 10 2232
20 19 2311
2183 2182 2185 γ

14

27

24
37
28

9h
8h
0°
−10°
−20°
−30°
CANIS MINOR
HYDRA
MONOCEROS
PYXIS
PUPPIS
M48
RT
F
FK
RV
T
MCG-1-24-1
2506
2525
2539
Mel 71
2423
2438
M46
2811
AK
2479
2440
2509
V407
2421
2613
2835
2784
2566
IL
M93
2482
2467
2559
2483
2527
Ru 44
TY
2571
2489
2627
2533
2567
2439
IC 2469
Ru 55
2663
RS
2579
Cr 185
AT
2546
h4063
AS
2451

25

7h

ORION
MONOCEROS
CANIS MAJOR
LEPUS
PUPPIS
COLUMBA

0°
–10°
–20°
–30°

V505
Cr 96
2282
Sh2-282
Cr 91
2324
2301
Do 25
2286
IC 466
(c)
2311
2232
2183
2185
2182
2170
2215
M50
2316
Sh2-294
2335
2353
Gum 1
2343
2149
2396
IC 2177
Mel 71
W(c)
Ced 90
2374
IC 468
2423
2422
2359
2345
FS
2438
M47
M46
2414
2360
FW
R
vdB 97
Sh2-302
2440
Sirius
Mirzam
Sh2-307
Sh2-301
2204
2421
2384
M41
2367
2196
vdB 96
h3945
Tr 7
2362
Cr 121
2139
vdB 98
VY
2354
2292
2293
2280
2217
Aludra
Adhara
Cr 132
FF
2439
Cr 140
Furud
2188
2090
2298
Wazn
Cr 135
V352

16

7h
6h

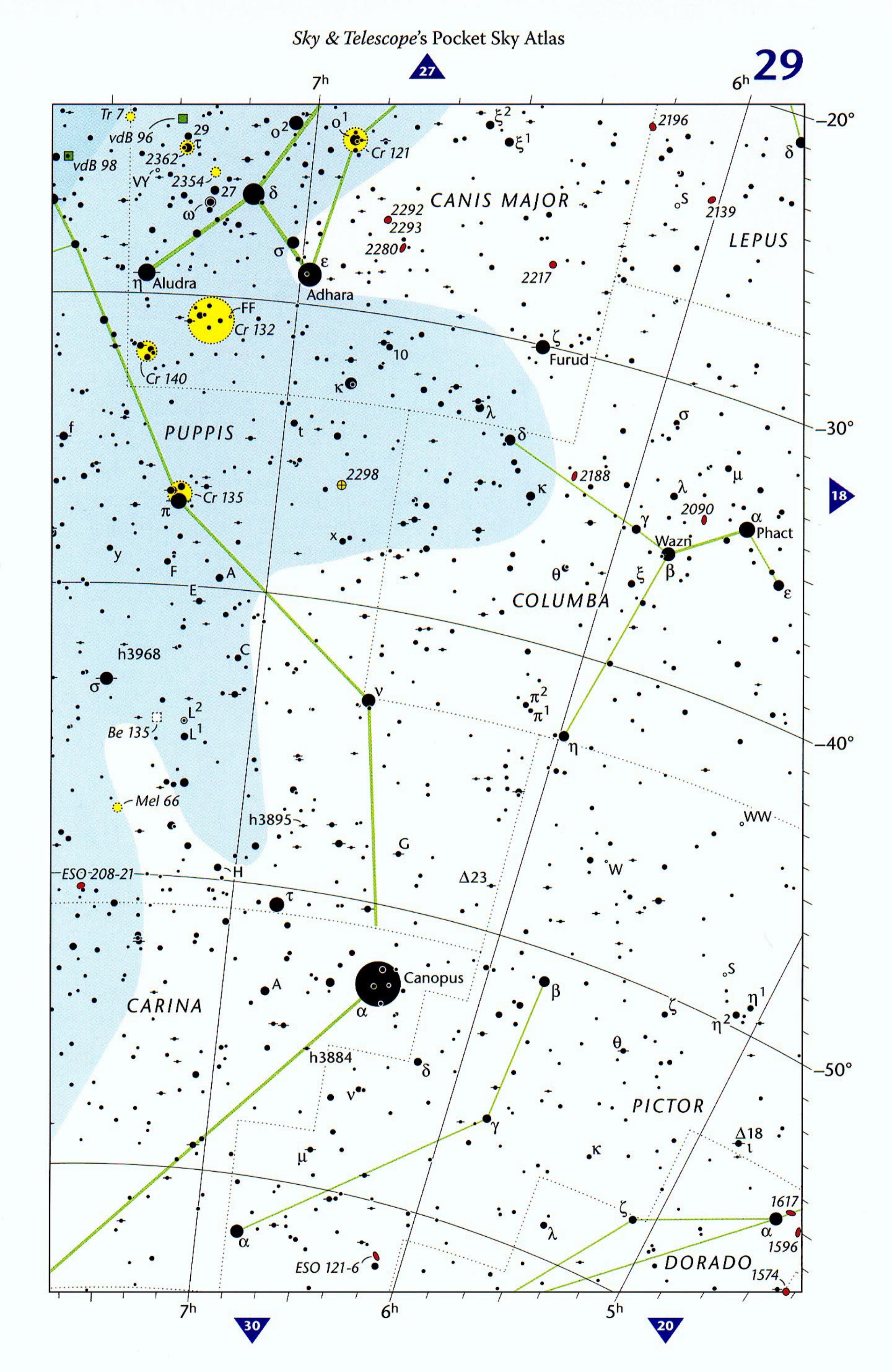
29

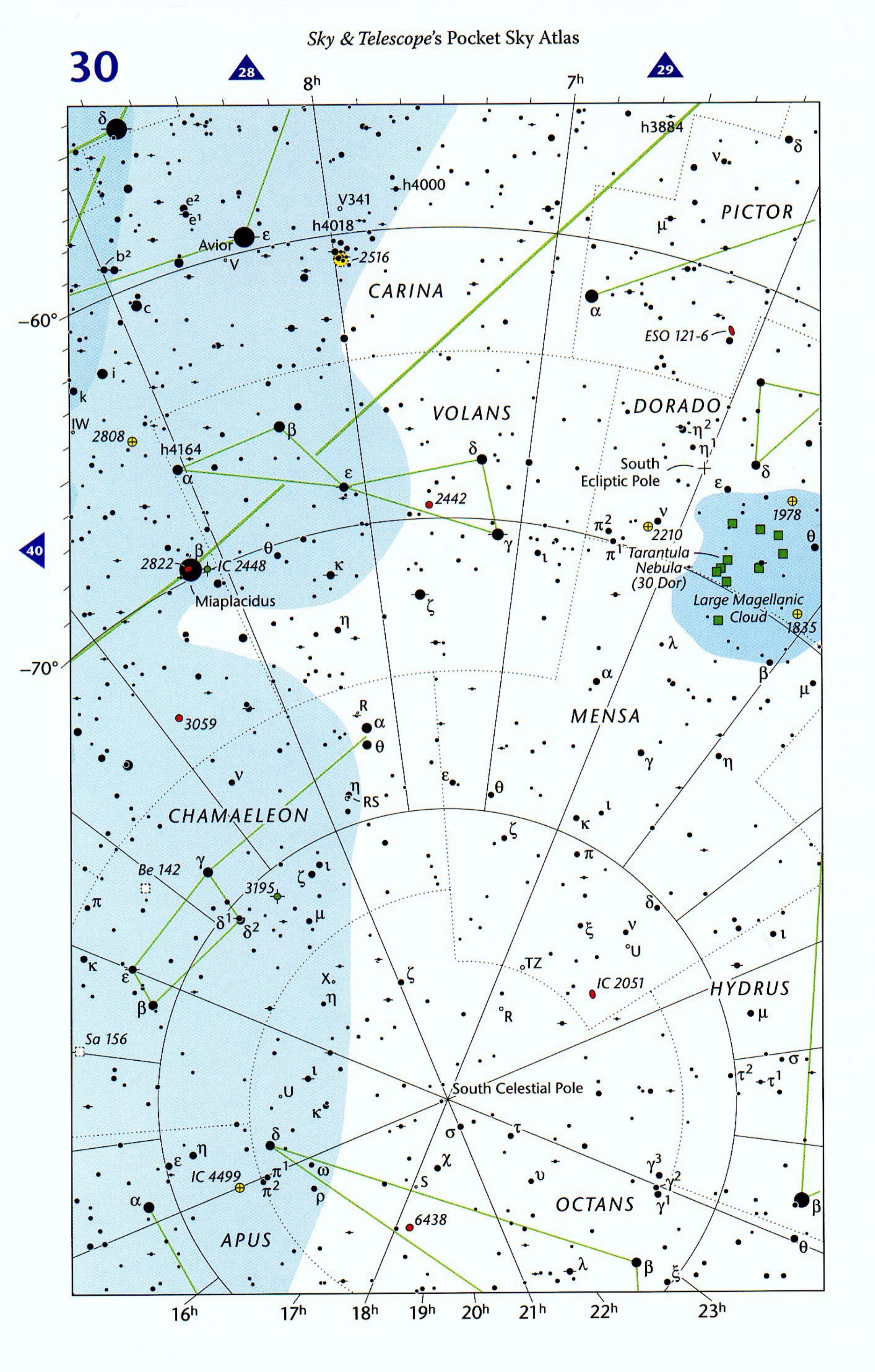
26
39
40
30

9h
8h
10h
9h
8h
−20°
−30°
−40°
−50°

HYDRA
PYXIS
PUPPIS
ANTLIA
VELA
CARINA

2613
M93
2482
vdB 98
2835
2566
2467
2784
2559
2483
2527
Ru 44
2571
2489
TY
2567
2533
2627
(c)
2439
Ru 55
RS
IC 2469
2663
2579
Cr 185
2579
AT
2451
2477
h4063
2546
AS
h4107
AP
2626
GO
Gum 15
Gum 17
Cr 197
SL 4
Tr 10
Vela SNR
SU
h4191
RZ
Pismis 4
Pismis 6
h4104
Gum 23
SW
IC 2395
PK 264-8.1
2547
ESO 208-21
Gum 25
2670
Mrk 18
V406
CV
2669
IC 2391
ESO 213-11
MS
2910
GL
h4283
Pismis 16
3228
CM
W Car
IC 2488
V341
h4000
h4018
2867
Avior
2516
3330
Aspidiske
RCW 50
IC 2581
3199
QX
IC 2501
3247
3293
3114


27
CANIS MAJOR
LEPUS
PUPPIS
COLUMBA
CARINA
PICTOR
DORADO
Aludra
Adhara
Furud
Wazn
Phact
Canopus
Cr 132
Cr 140
Cr 135
Cr 121
Tr 7
vdB 96
vdB 98
2362
2354
2292
2293
2280
2217
2196
2139
2298
2188
2090
h3968
Be 135
Mel 66
h3895
ESO 208-21
Δ23
h3884
Δ18
ESO 121-6
1617
1596
1574
−20°
−30°
−40°
−50°
18
30
20


28
29
40
8h
7h
-60°
-70°
16h
17h
18h
19h
20h
21h
22h
23h
CARINA
PICTOR
VOLANS
DORADO
MENSA
CHAMAELEON
HYDRUS
OCTANS
APUS
Avior
Miaplacidus
h3884
h4000
V341
h4018
2516
ESO 121-6
2808
h4164
South Ecliptic Pole
2442
1978
2210
Tarantula Nebula (30 Dor)
Large Magellanic Cloud
1835
2822
IC 2448
3059
Be 142
3195
Sa 156
TZ
IC 2051
South Celestial Pole
IC 4499
6438

Charts 31–40

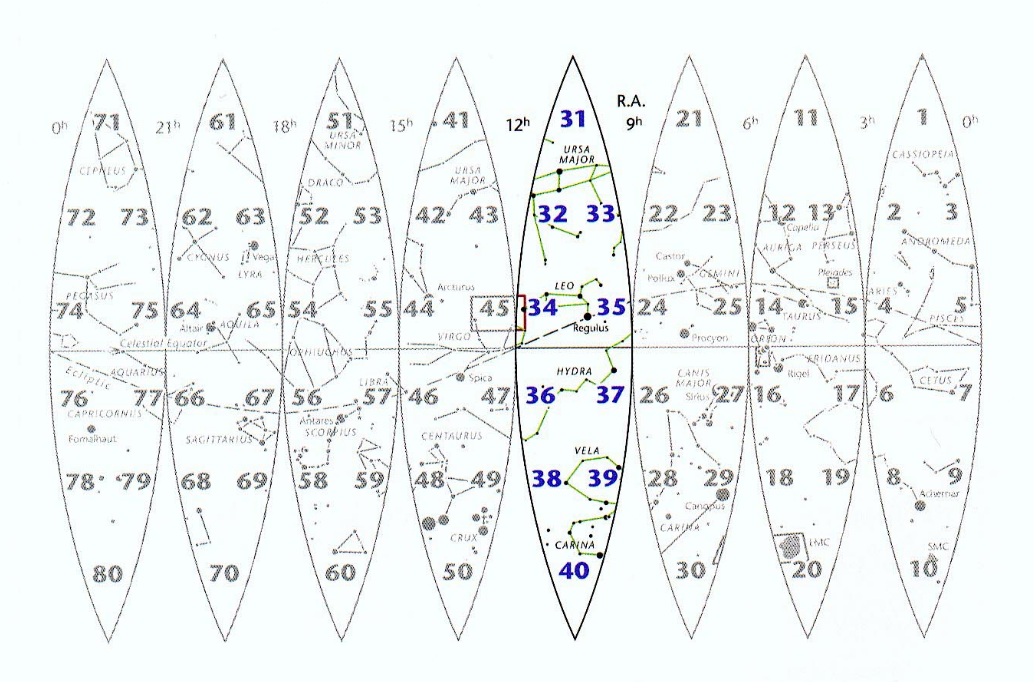
Right Ascension 9h to 12h

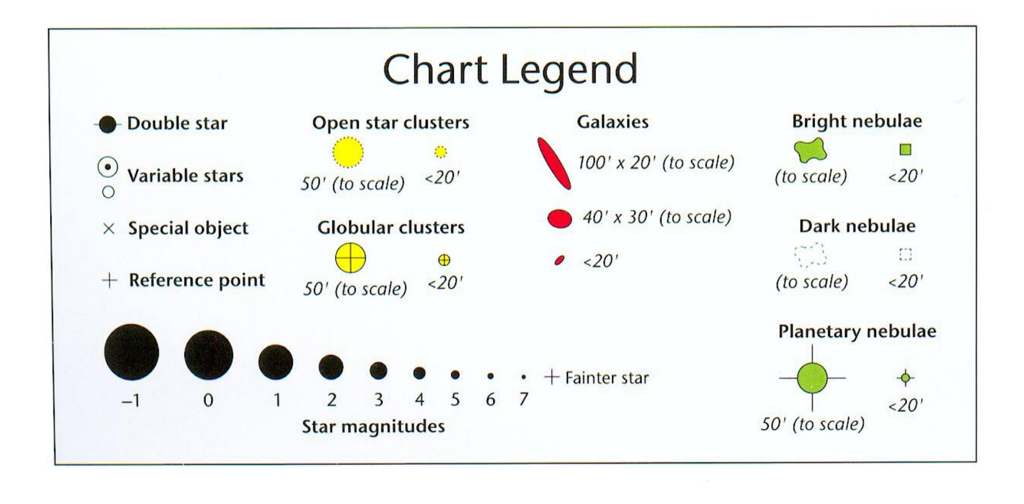
This section is highest in the night sky around these times:

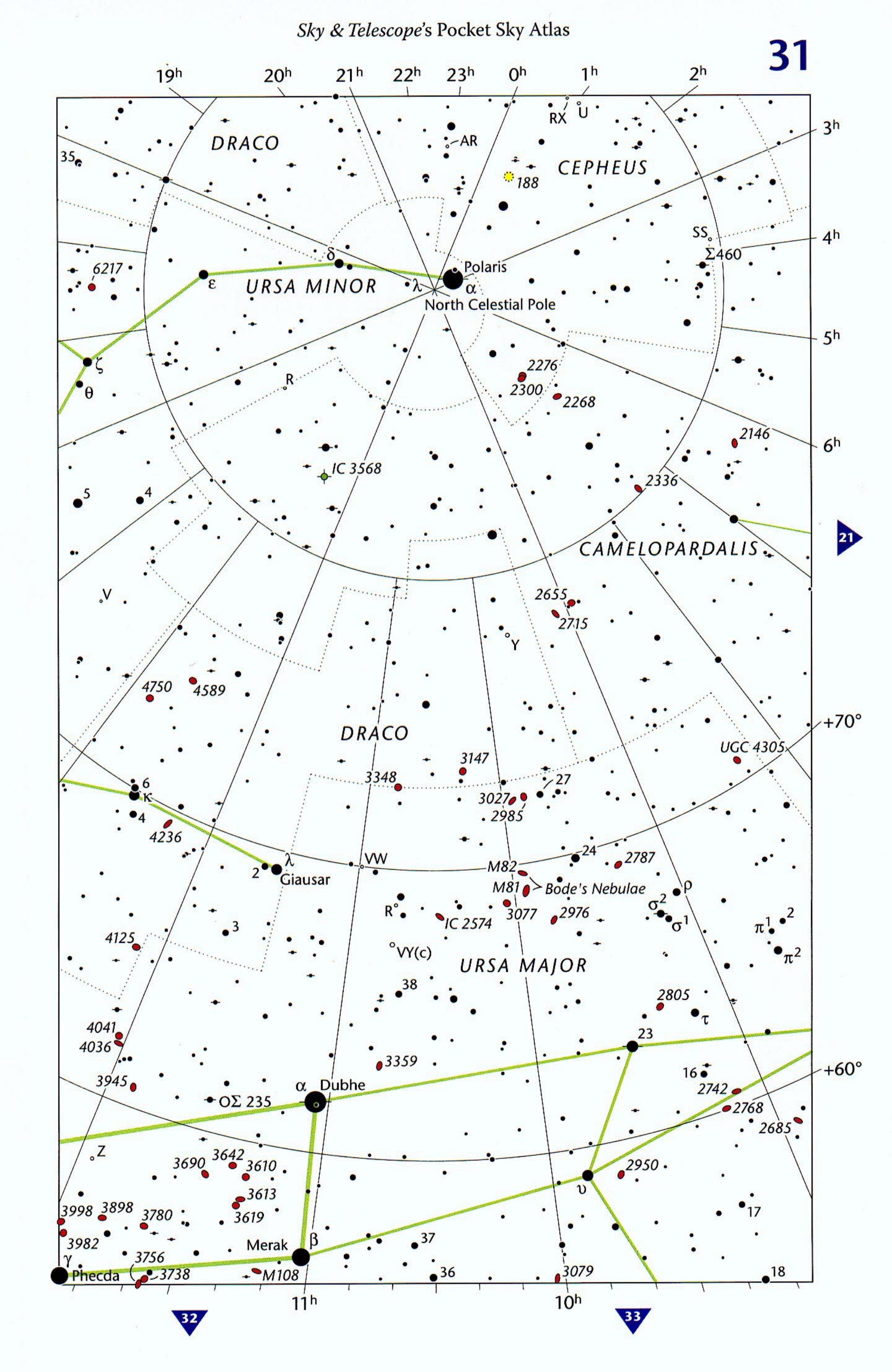
Evening: April

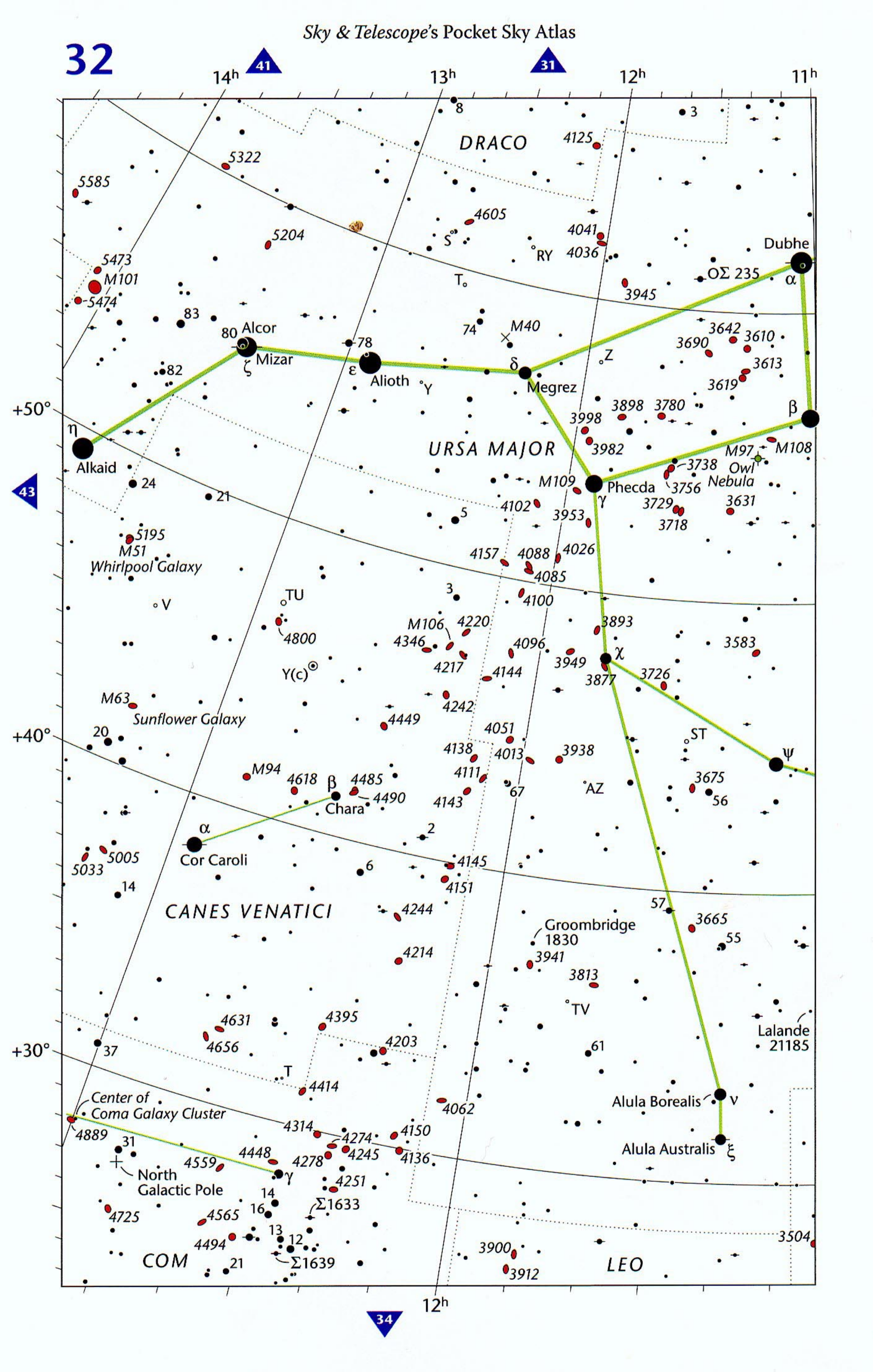
Midnight: February & March

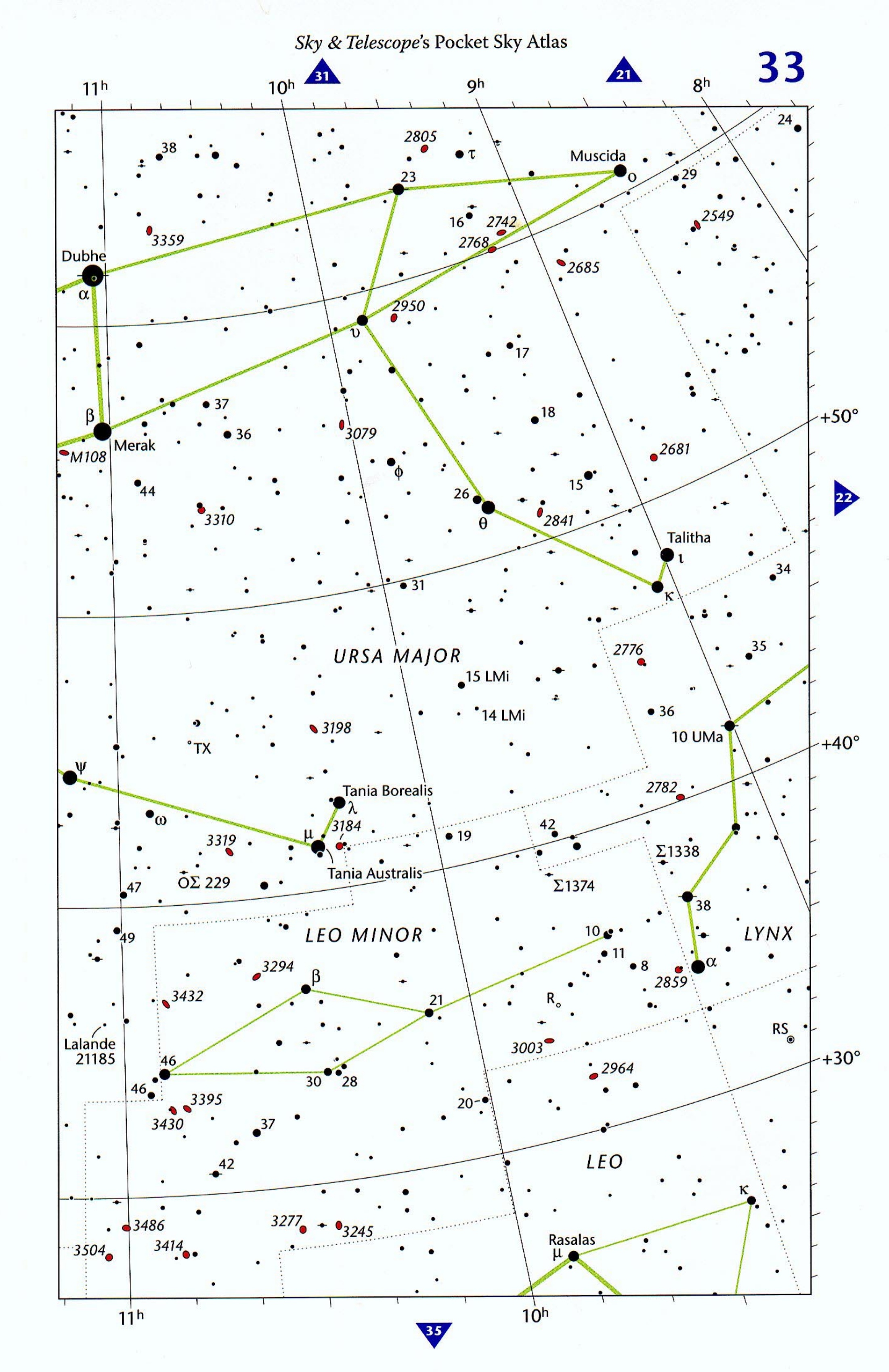
Morning: January

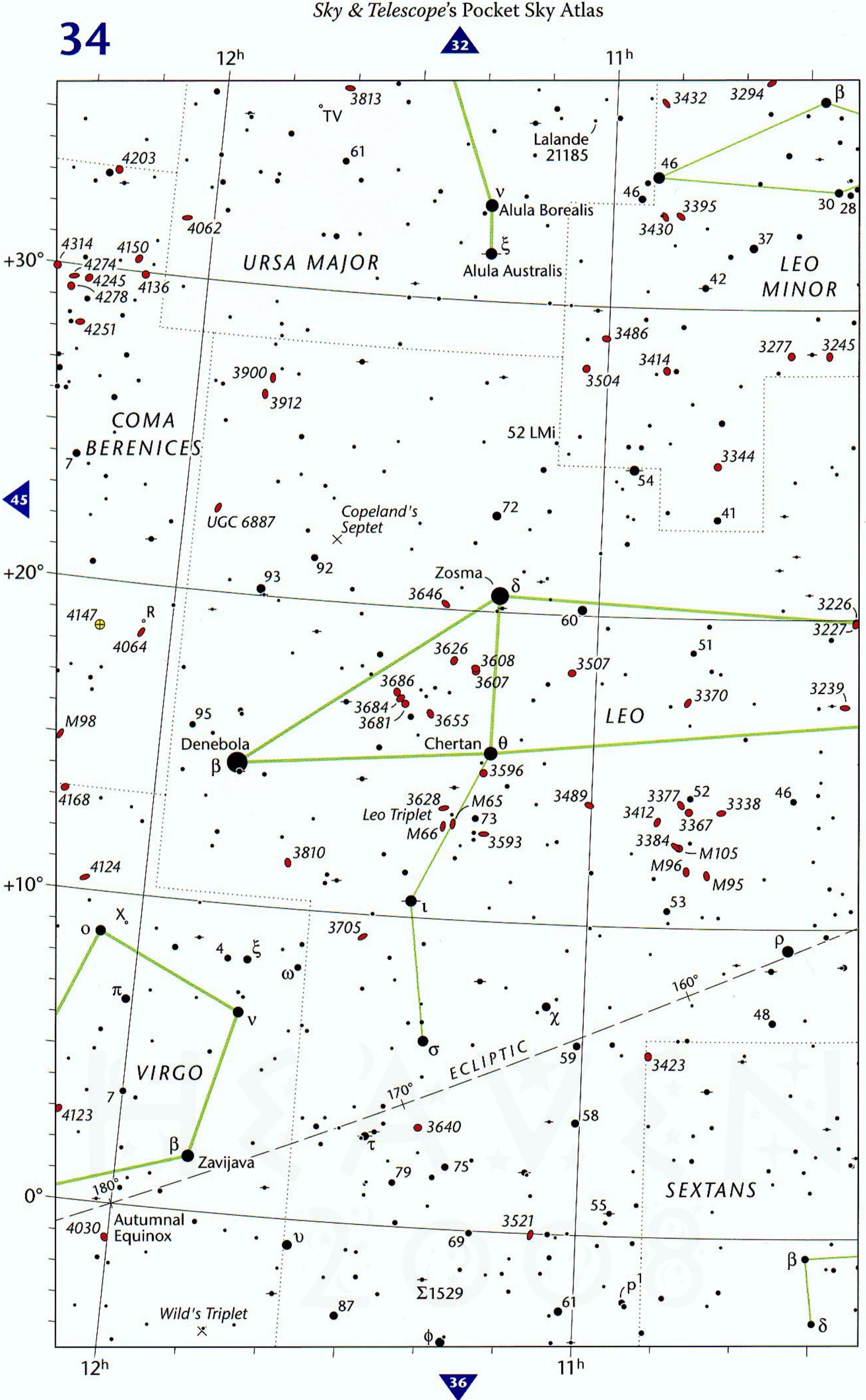



Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1 0 1 2 3 4 5 6 7
Fainter star
Star magnitudes


DRACO
CEPHEUS
URSA MINOR
Polaris
North Celestial Pole
CAMELOPARDALIS
DRACO
URSA MAJOR
Giausar
Bode's Nebulae
Dubhe
Merak
Phecda
M82
M81
M108
IC 3568
IC 2574
UGC 4305
+70°
+60°
19h
20h
21h
22h
23h
0h
1h
2h
3h
4h
5h
6h
11h
10h
21
32
33


41
31
14h
13h
12h
11h
43
34
+50°
+40°
+30°
DRACO
URSA MAJOR
CANES VENATICI
COM
LEO
Dubhe
Megrez
Phecda
Alioth
Mizar
Alcor
Alkaid
Cor Caroli
Chara
Alula Borealis
Alula Australis
M101
M51
Whirlpool Galaxy
M63
Sunflower Galaxy
M94
M106
M109
M97
Owl Nebula
M108
M40
OΣ 235
Groombridge 1830
Lalande 21185
Center of Coma Galaxy Cluster
North Galactic Pole
Σ1633
Σ1639
Y(c)
TU
RY
5585
5322
5204
5473
5474
4605
4125
4041
4036
3945
3642
3610
3690
3613
3619
3898
3780
3998
3982
3738
3756
3729
3718
3631
4102
3953
4157
4088
4085
4026
4100
3893
4800
4220
4346
4217
4096
3949
3877
3726
3583
4144
4242
4449
4051
4138
4013
3938
4111
4143
3675
4618
4485
4490
5195
5005
5033
4145
4151
4244
3665
4214
3941
3813
4631
4656
4395
4203
4414
4062
4889
4314
4274
4150
4245
4136
4448
4278
4559
4251
4725
4565
4494
3900
3912
3504
Groombridge
1830


31
21
11h
10h
9h
8h
24
2805
τ
Muscida
ο
23
29
2549
16
2742
2768
38
3359
Dubhe
α
2685
2950
υ
17
37
36
β
Merak
M108
3079
18
2681
φ
44
15
26
θ
3310
2841
+50°
22
Talitha
ι
κ
34
31
URSA MAJOR
2776
35
15 LMi
14 LMi
36
3198
10 UMa
TX
+40°
ψ
Tania Borealis
λ
2782
ω
3184
μ
19
42
3319
Σ1338
Tania Australis
47
ΟΣ 229
Σ1374
38
49
LEO MINOR
10
LYNX
11
8
α
3294
2859
β
3432
21
R
Lalande 21185
RS
3003
46
+30°
2964
46
30
28
3395
20
3430
37
LEO
42
κ
3486
3277
3245
3504
3414
Rasalas
μ
11h
10h
35



32
12h
11h
URSA MAJOR
LEO MINOR
COMA BERENICES
LEO
VIRGO
SEXTANS
ECLIPTIC
+30°
+20°
+10°
0°
Alula Borealis
Alula Australis
Lalande 21185
52 LMi
Copeland's Septet
Zosma
Denebola
Chertan
Leo Triplet
Zavijava
Autumnal Equinox
Wild's Triplet
UGC 6887
Σ1529
M65
M66
M105
M96
M95
M98
45
36

33

10h 9h

β 10 38 LYNX
21 11 8 2859 α 2683
R 3003 σ2 σ1
30 28 σ4 σ3
LEO MINOR 20 2964 RS Σ1291 57 +30°
τ ι
3245 ρ2 ρ1
Rasalas μ κ
W ν
22 ε
ζ Adhafera λ Alterf ξ Asellus Borealis γ
3193 3162 Beehive Cluster M44
3190 2903 +20°
3226 γ T(c) ε
3227 Algieba CANCER δ
40 130° Asellus Australis
3239 X(c)
OΣ 215 η LEO
o
81
140° π
37 ψ
UGC 5470 M67
Regulus α ν ECLIPTIC Acubens α 60
150° R ξ κ RT +10°
31 o PK 219+31.1
6 ω
π 2775 ε
10 ζ ρ
ω
UGC 5373 2 Sex HYDRA S
3169 3166
θ
SEXTANS 0°
β α ι τ2
τ1 14
δ 2974

10h 9h

24

37

34

11h

π
7
Zavijava
β
ECLIPTIC
170°
180°
Autumnal
Equinox
0°
4030
3640
τ
79
75
58
55
3521
69
υ
Σ1529
61
p1
β
δ
VIRGO
87
φ
Wild's Triplet
LEO
SEXTANS

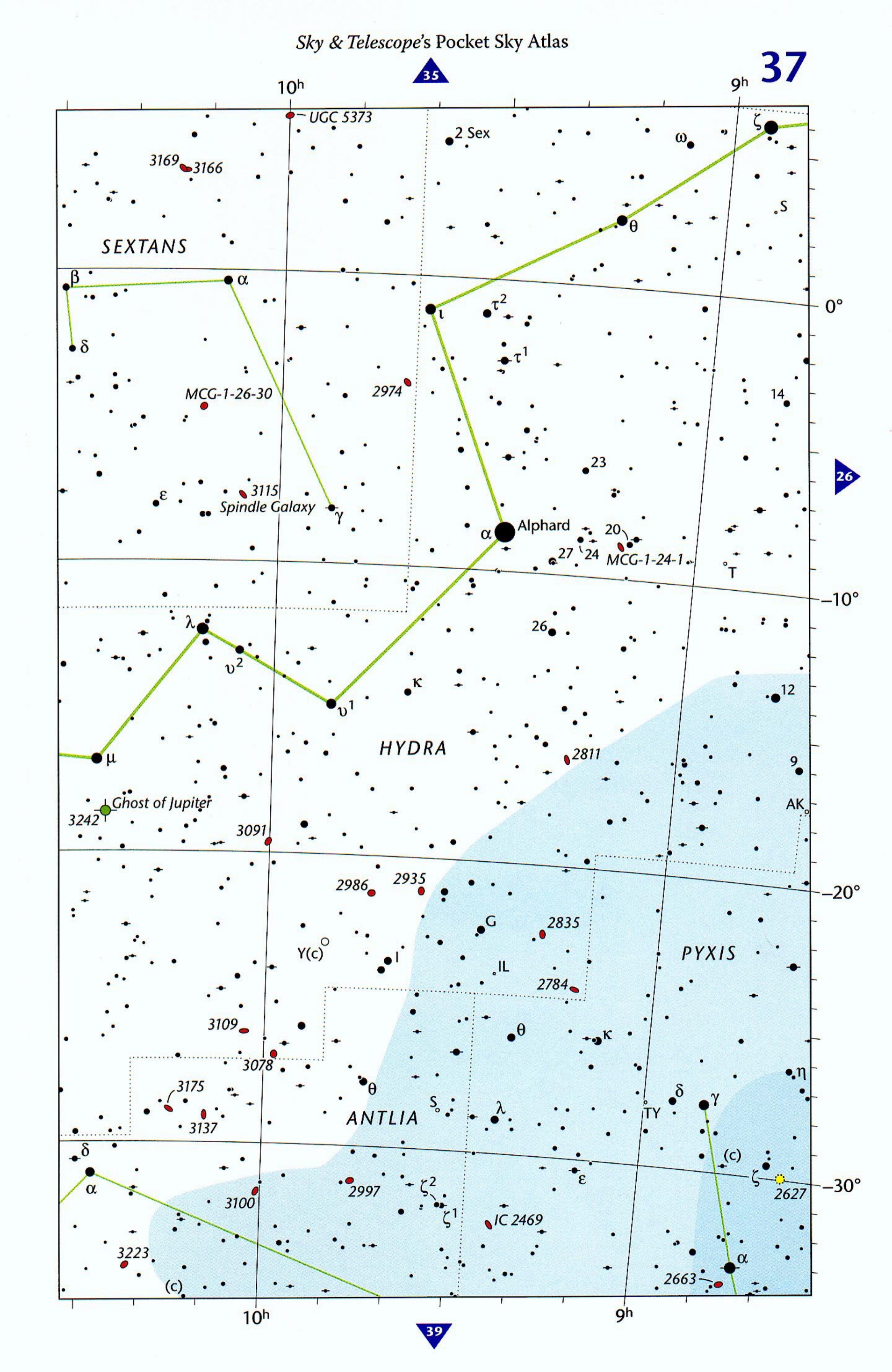
47

θ
3672
−10°
ε
RU
κ
FF
Σ1604
U(c)
ι
3962
δ
CRATER
CORVUS
ν
φ2
b1
φ
μ
3887
η
γ
α
Alkes
Gienah
γ
3242
4038
Antennae
ζ
λ
4039
4027
b3
31-Crt
3981
V
−20°
3511
3513
β
ε
44
3
Alchiba
α
TT
χ1
3585
χ2
3311
HYDRA
3923
N
3904
δ
4105
3717
α
−30°
ξ
3621
β
V335
ο

12h

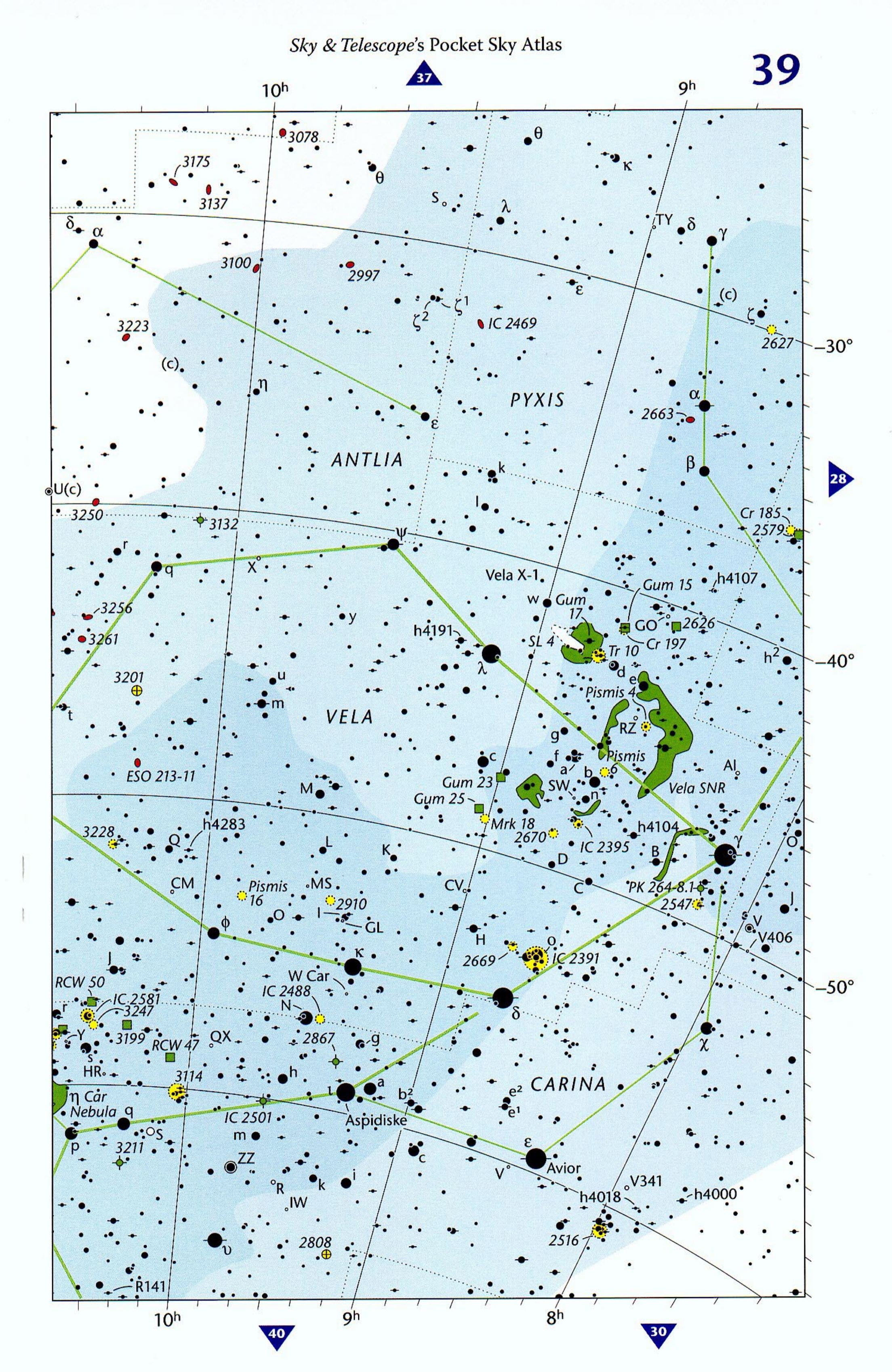
11h

38


35
10h
9h
UGC 5373
2 Sex
3169
3166
SEXTANS
0°
2974
MCG-1-26-30
14
23
26
3115
Spindle Galaxy
Alphard
20
27
24
MCG-1-24-1
T
−10°
26
HYDRA
12
2811
9
Ghost of Jupiter
3242
AK
3091
−20°
2986
2935
G
2835
Y(c)
IL
PYXIS
2784
3109
3078
3175
3137
ANTLIA
S
TY
(c)
−30°
2627
3100
2997
IC 2469
3223
2663
(c)
39

36
49
50
40

12h
11h
13h
−30°
−40°
−50°
CORVUS
Alchiba
HYDRA
ANTLIA
CENTAURUS
VELA
CRUX
Gacrux
Acrux
MUSCA
CARINA
Coalsack
Jewel Box 4755
Blue Planetary 3918
η Car Nebula
Southern Pleiades IC 2602
Stock 13
Stock 14
Harvard 5
Rmk 14
Ru 108
Ru 93
Ru 98
Cr 272
Cr 236
Mel 105
Mel 101
RCW 50
RCW 58
IC 3370
IC 3896
IC 2714
IC 2944/8
IC 2966
V335
V919
U(c)
3311
3585
3923
3904
3717
4105
3621
3347
3557
3250
3680
3366
4373
4696
4709
4835
4945
4976
3330
3532
3293
3572
3699
3603
3579
3766
4103
4349
5138
4609
4463
R213


37
28
40
30
10h
9h
8h
-30°
-40°
-50°
ANTLIA
PYXIS
VELA
CARINA
3078
3175
3137
3100
2997
IC 2469
3223
2627
2663
U(c)
3250
3132
Cr 185
2579
Vela X-1
Gum 15
h4107
3256
3261
h4191
Gum 17
GO
2626
SL 4
Tr 10
Cr 197
3201
Pismis 4
RZ
Pismis 6
ESO 213-11
Gum 23
Gum 25
SW
Vela SNR
AI
3228
h4283
Mrk 18
2670
IC 2395
h4104
CM
Pismis 16
MS
2910
GL
CV
PK 264-8.1
2547
V406
2669
IC 2391
RCW 50
IC 2581
3247
W Car
IC 2488
3199
RCW 47
QX
2867
3114
η Car Nebula
IC 2501
Aspidiske
Avior
3211
ZZ
V341
h4018
h4000
IW
2808
2516
R141

38

39

50

11h 10h

CENTAURUS
VELA
CRUX
CARINA
MUSCA
VOLANS
CHAMAELEON
APUS
MENSA
HYDRUS
OCTANS

RCW 50
IC 2581
3247
VY
3293
3199
Blue Planetary
3918
Stock 13
3532
QX
RCW 47
IC 2488
2867
3114
ER
U
AG
η Car Nebula
3572
3699
3603
Cr 236
IC 2501
Aspidiske
3579
BZ
3211
3766
Stock 14
4103
IC 2714
Mel 105
Southern Pleiades
IC 2602
Mel 101
IC 2944/8
Ru 98
IC 2966
RCW 58
2808
R141
3136
h4164
4463
2822
Miaplacidus
IC 2448
Dark Doodad
3059
4833
4372
Be 142
Sa 156
3195
IC 4499
South Celestial Pole
IC 2051
6438

−60°
−70°

15h
16h
17h
18h

19h 20h 21h 22h 23h 0h 1h 2h

Charts 41–50

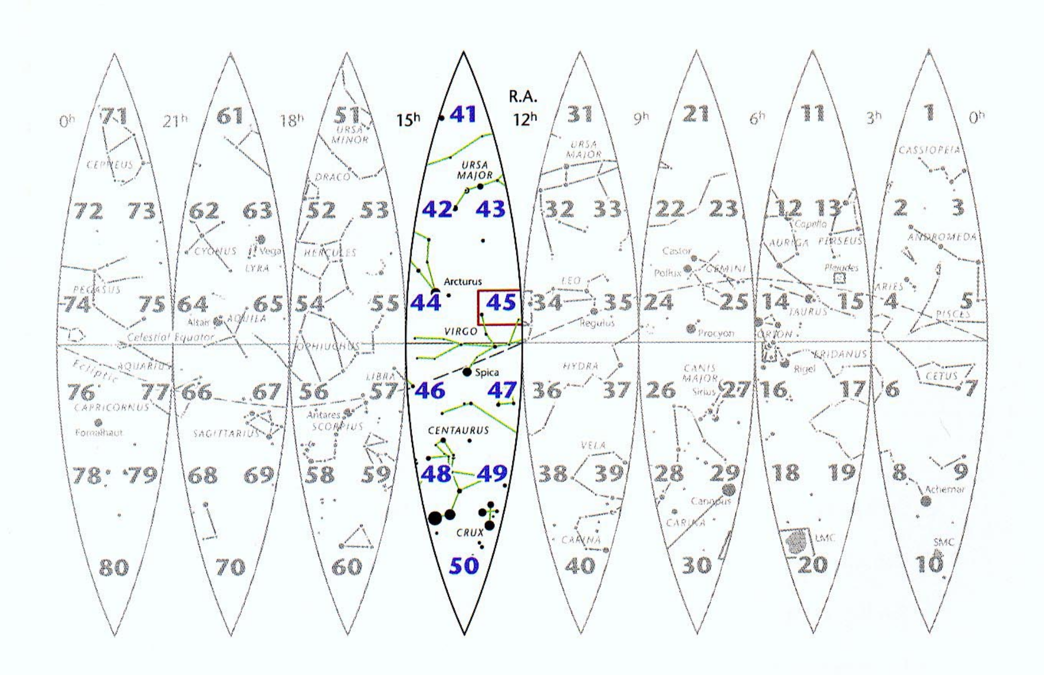
Right Ascension 12^h to 15^h

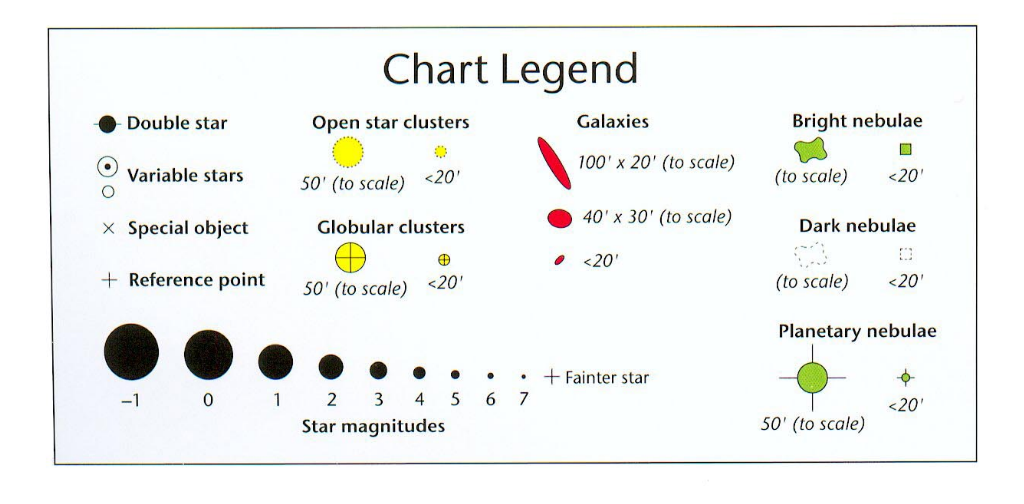
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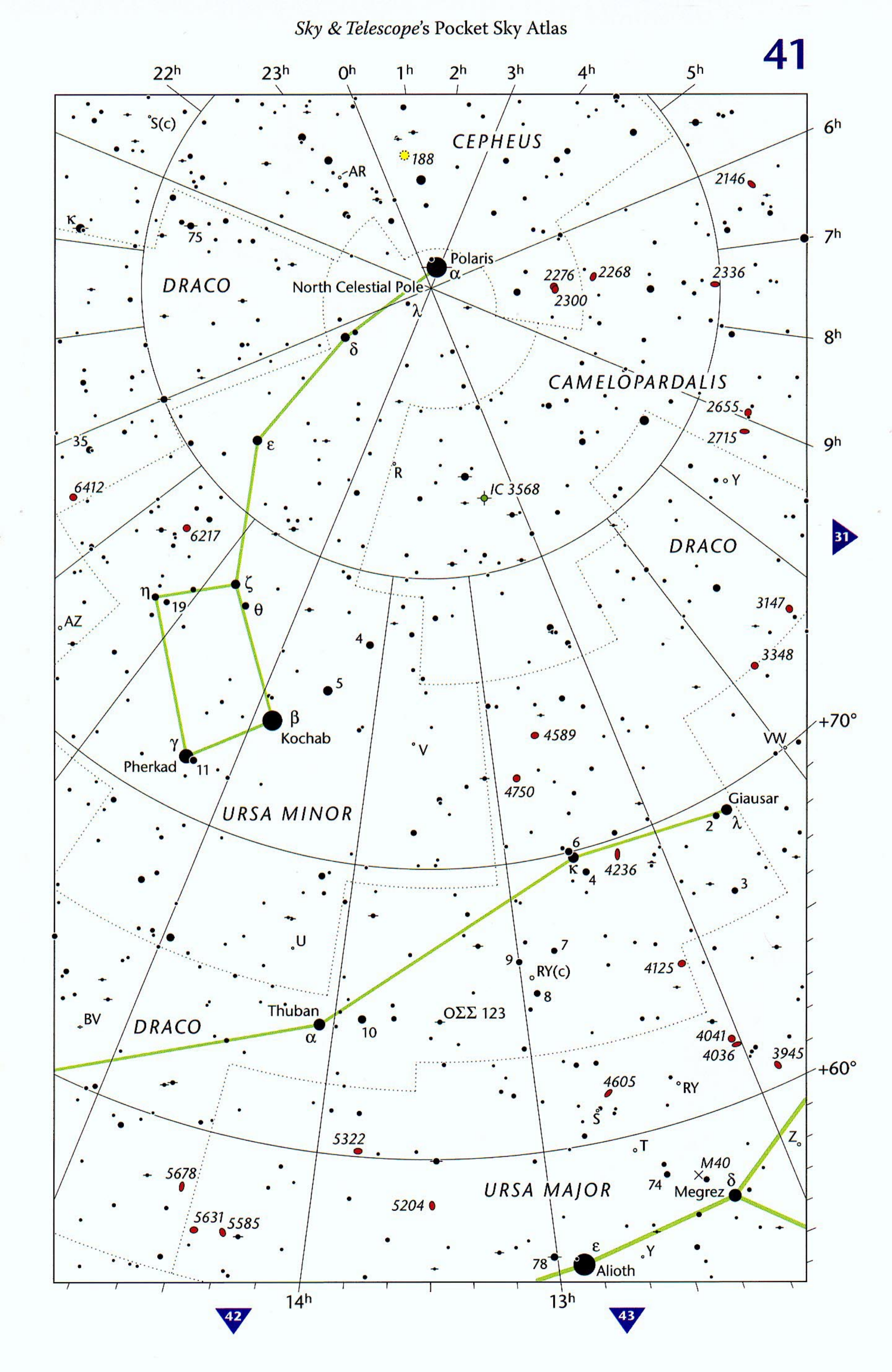
Evening: May & June

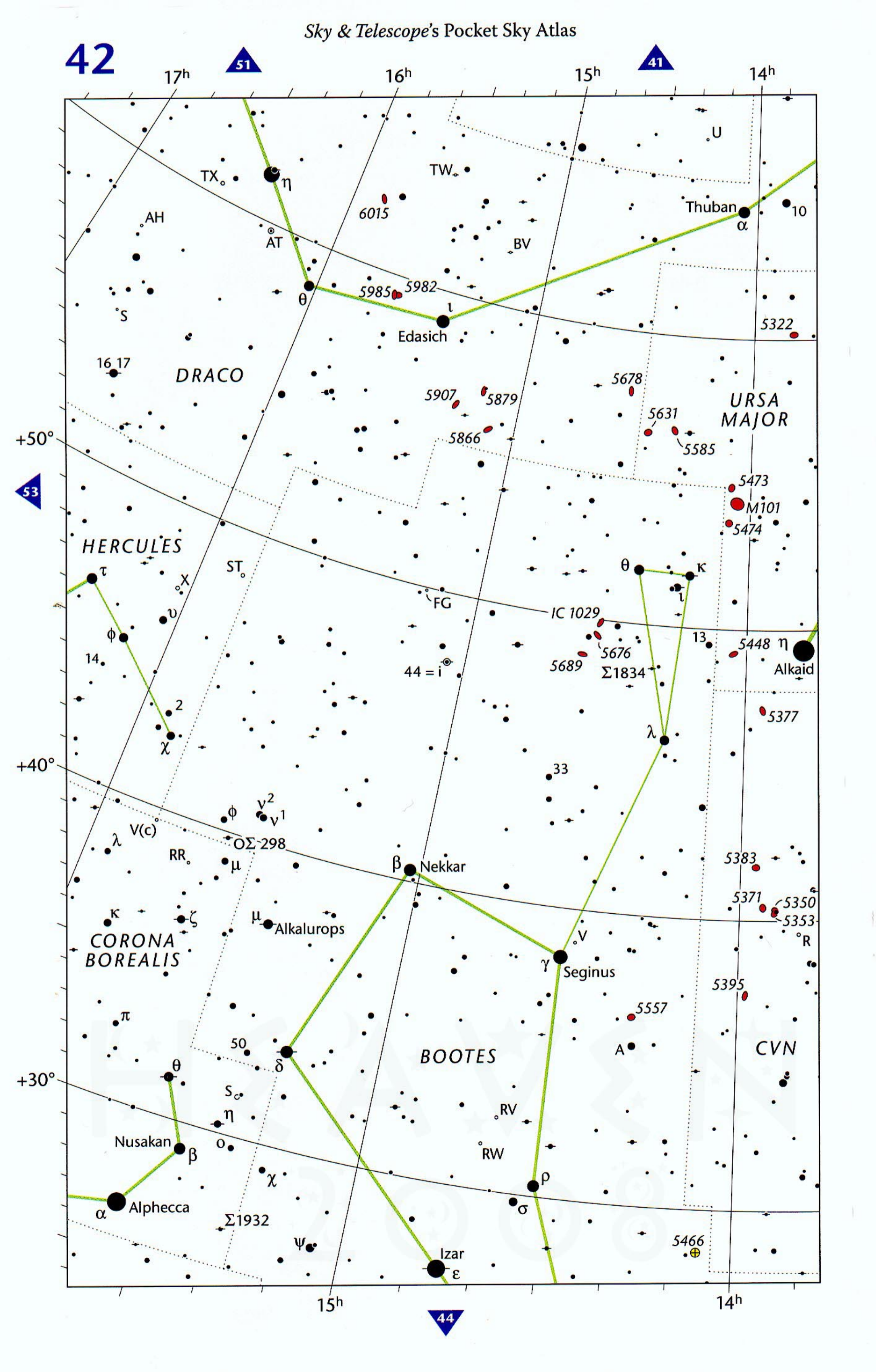
Midnight: April

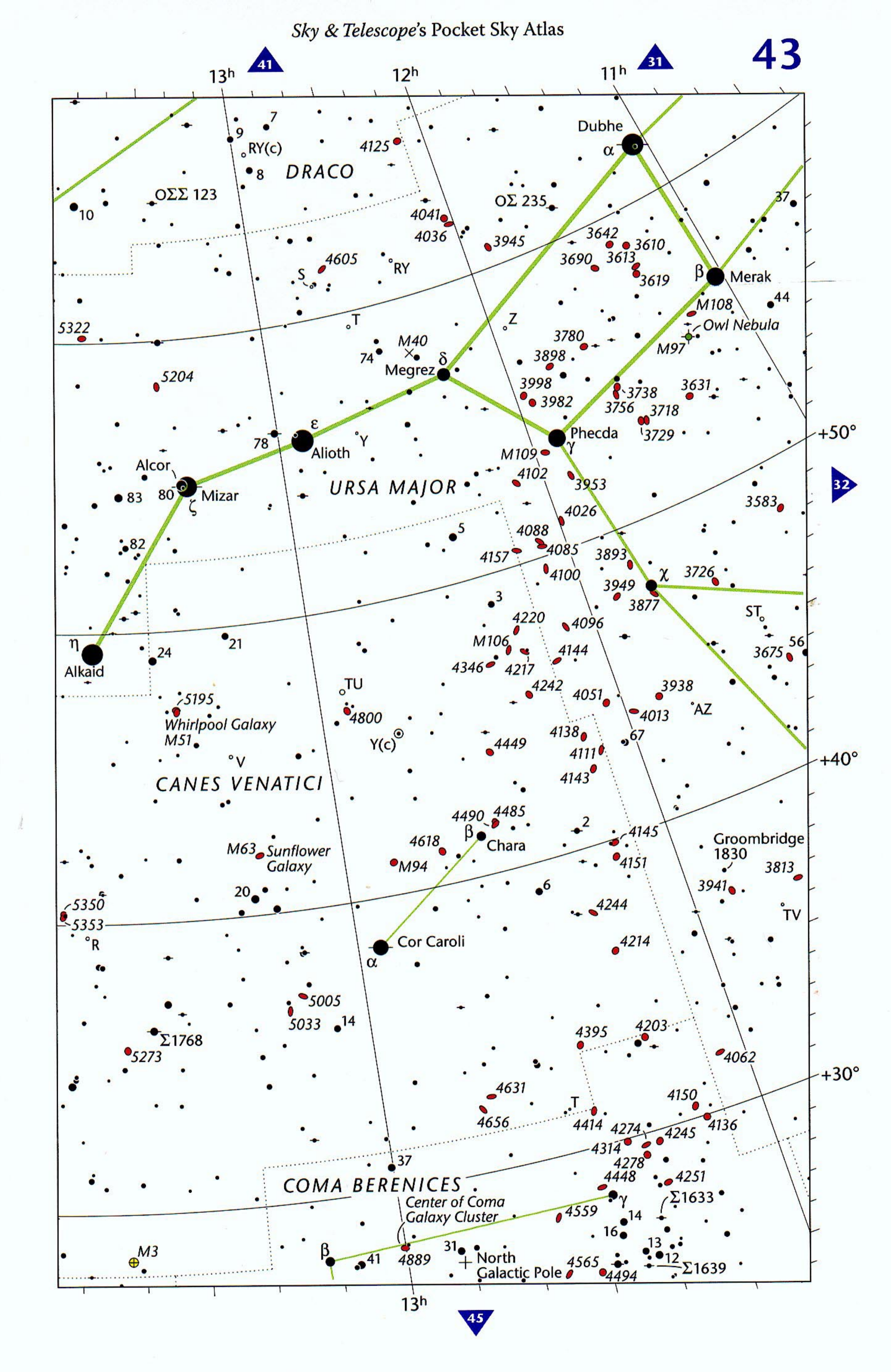
Morning: February & March

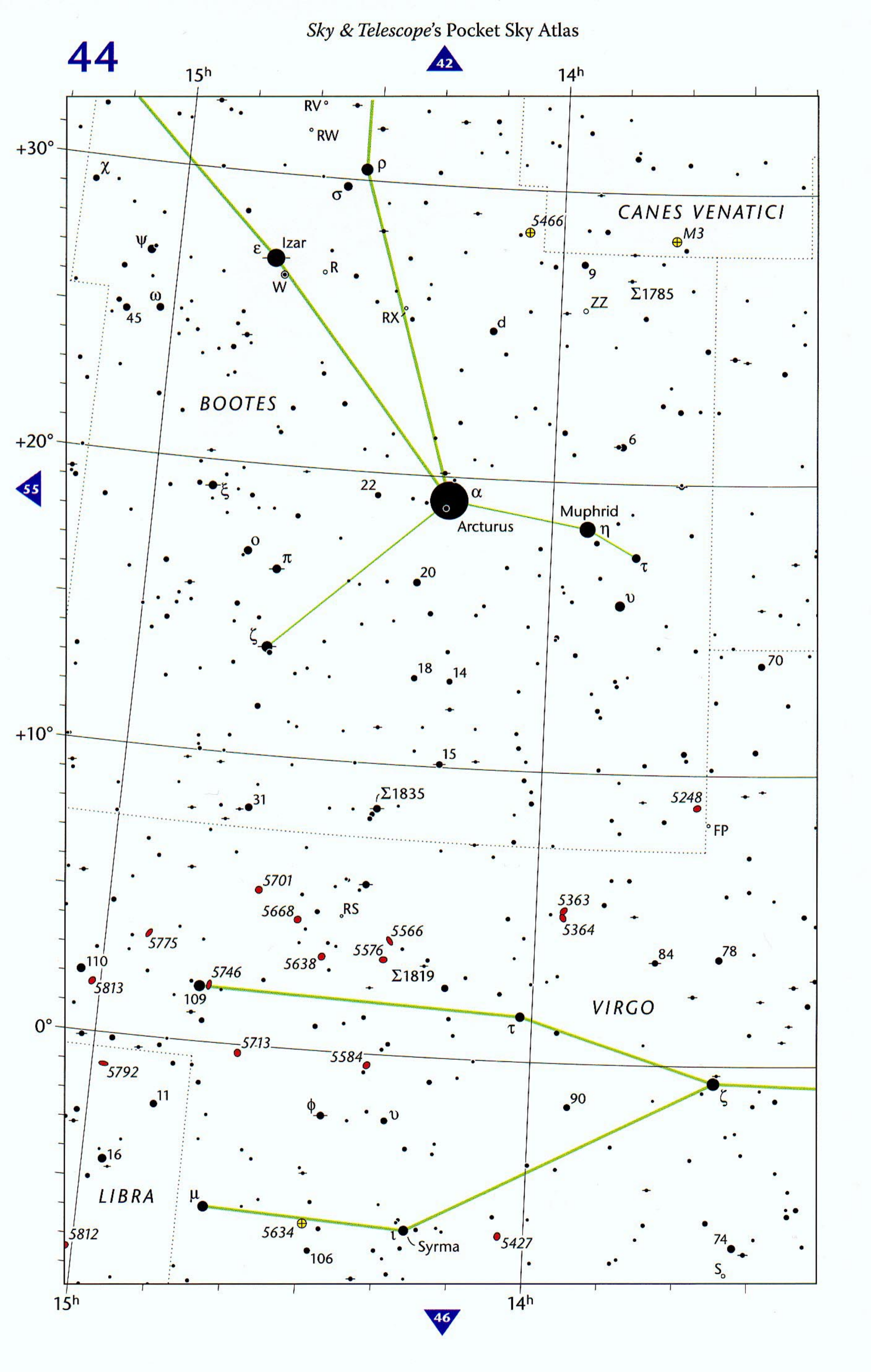



Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1
0
1
2
3
4
5
6
7
Fainter star
Star magnitudes


CEPHEUS
DRACO
CAMELOPARDALIS
URSA MINOR
URSA MAJOR
Polaris
North Celestial Pole
Kochab
Pherkad
Giausar
Thuban
Megrez
Alioth
IC 3568
OΣΣ 123
M40
+70°
+60°
14h
13h
42
43
31


51
41
53
44
17h
16h
15h
14h
+50°
+40°
+30°
DRACO
URSA MAJOR
HERCULES
CORONA BOREALIS
BOOTES
CVN
Thuban
Edasich
Nekkar
Alkalurops
Seginus
Alkaid
Nusakan
Alphecca
Izar
M101
IC 1029
OΣ 298
Σ1834
Σ1932
44 = i
6015
5985
5982
5322
5678
5907
5879
5631
5866
5585
5473
5474
5676
5689
5448
5377
5383
5371
5350
5353
5395
5557
5466
TX
AH
AT
TW
BV
U
S
ST
X
FG
V(c)
RR
RV
RW
R
V
A
16 17
10
13
14
2
33
50


41
31
13h
12h
11h
DRACO
URSA MAJOR
CANES VENATICI
COMA BERENICES
Dubhe
Merak
Megrez
Phecda
Alioth
Mizar
Alcor
Alkaid
Chara
Cor Caroli
Owl Nebula
Whirlpool Galaxy
Sunflower Galaxy
Groombridge 1830
Center of Coma Galaxy Cluster
North Galactic Pole
+50°
+40°
+30°
32
13h
45


42
15h
14h
+30°
+20°
+10°
0°
55
46
CANES VENATICI
BOOTES
VIRGO
LIBRA
Izar
Arcturus
Muphrid
Syrma
M3
5466
Σ1785
Σ1835
Σ1819
5248
5701
5668
5566
5576
5638
5775
5746
5813
5363
5364
5713
5584
5792
5634
5427
5812
RV
RW
R
W
RX
ZZ
RS
FP
S
110
109
106
84
78
74
90
70
45
31
22
20
18
14
15
11
16
9
6
d

43

13h 12h

4631 4656 T 4062 URSA MAJOR +30° 4414 4150 37 4314 4245 4136 4278 4274 4448 Center of Coma Galaxy Cluster γ 4251 β 4889 4559 3900 31 14 41 LEO North Galactic Pole Σ1633 3912 16 13 12 4725 4565 4494 Σ1639 21 7 18 COMA BERENICES UGC 6887 Copeland's Septet FS Black-Eye Galaxy 23 92 M64 93 26 +20° Σ1687

34

4147 R 24 M85 4064 5053 M53 11 α 36 27 95 4651 M100 β 4710 6 M98 M91 M88 M99 Denebola 4866 M90 M86 M89 M87 M84 3810 M60 M59 M58 4178 ε 4124 +10° ρ Vindemiatrix X o 59 ξ 4 4698 4535 4526 M49 4612 4365 π ν 32 4570 R FH 4281 4261 17 4273 σ U VIRGO RT 4713 M61 BK 7 4496A 4457 16 4123 δ 4665 Zavijava β 4636 4527 3C 273 4900 4536 4179 4845 4772 4643 180° SS(c) 0° 4517 Autumnal Equinox 4632 4666 Zaniah 4592 η 4030 OΣ 256 4753 Porrima γ ECLIPTIC Wild's Triplet 4684 4691 SW 190° 4546 4593 θ 4941 4697 4731 4981 4775 4504

13h 12h

47



44
57
48

15h
14h
0°
−10°
−20°
−30°

VIRGO
LIBRA
HYDRA
CENTAURUS
LUPUS
ECLIPTIC
210°
220°
230°

5668
RS
5566
Σ1819
5638
5576
5775
84
78
5838
110
5813
5746
109
τ
5850
5846
5584
5713
ζ
90
5792
ϕ
υ
11
16
μ
ι
Syrma
5634
5427
74
106
Y
S
5812
82
δ
95
β
Zubeneschamali
κ
76
17
ξ2
ξ1
FY
λ
μ
α1
α2
Zubenelgenubi
o
ν
5728
89
87
5247
DL
ι
S
5897
H N 28
RS
5903
47
12
σ
54
(c)
56
5694
π
50
51
59
58
W
RU
Seashell Galaxy
M83
52
2
5253
h
1
1
IC 4296
T
5824
5419
2
ESO 383-87
c1
c2
y
z

45

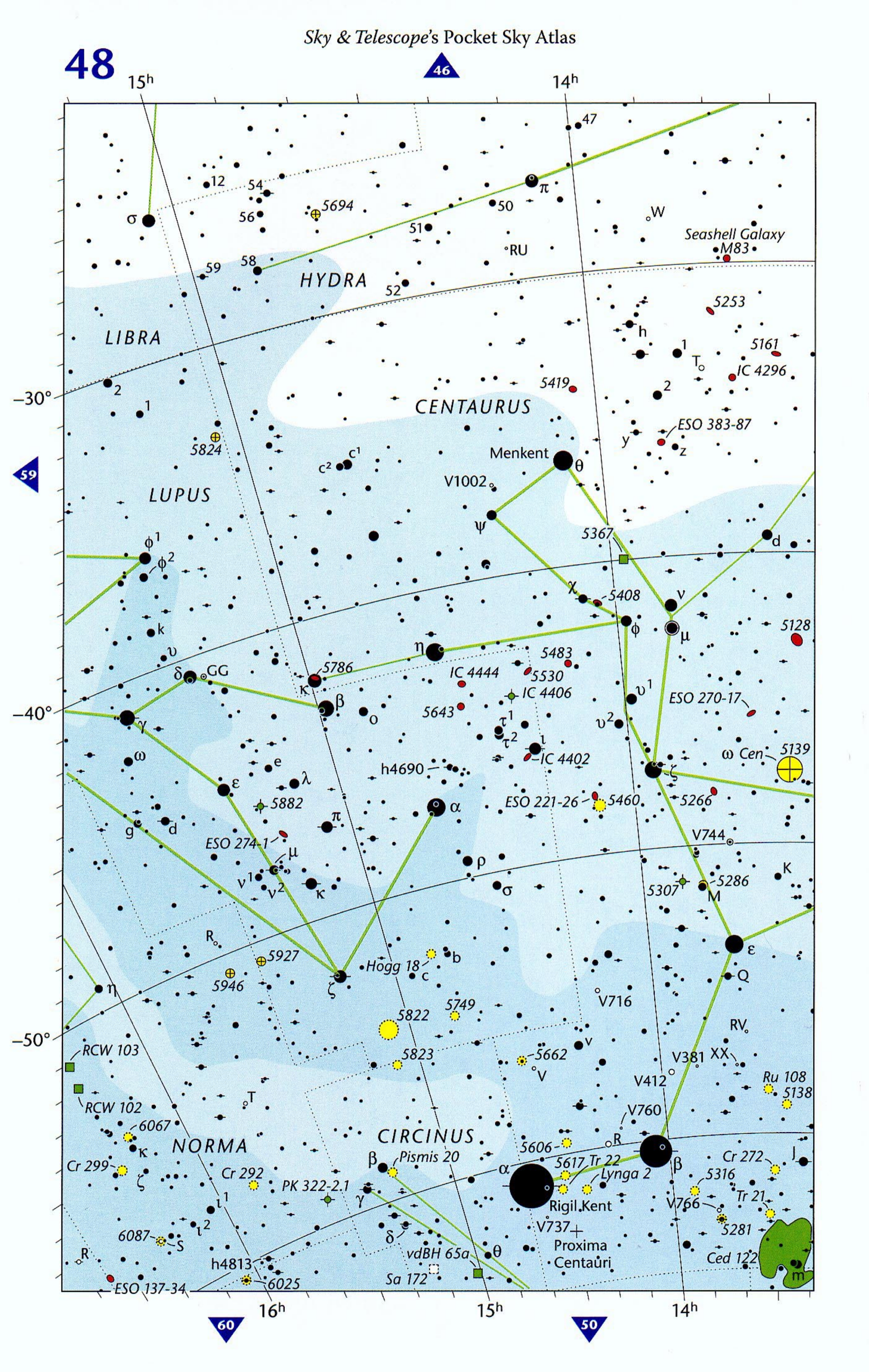
13h

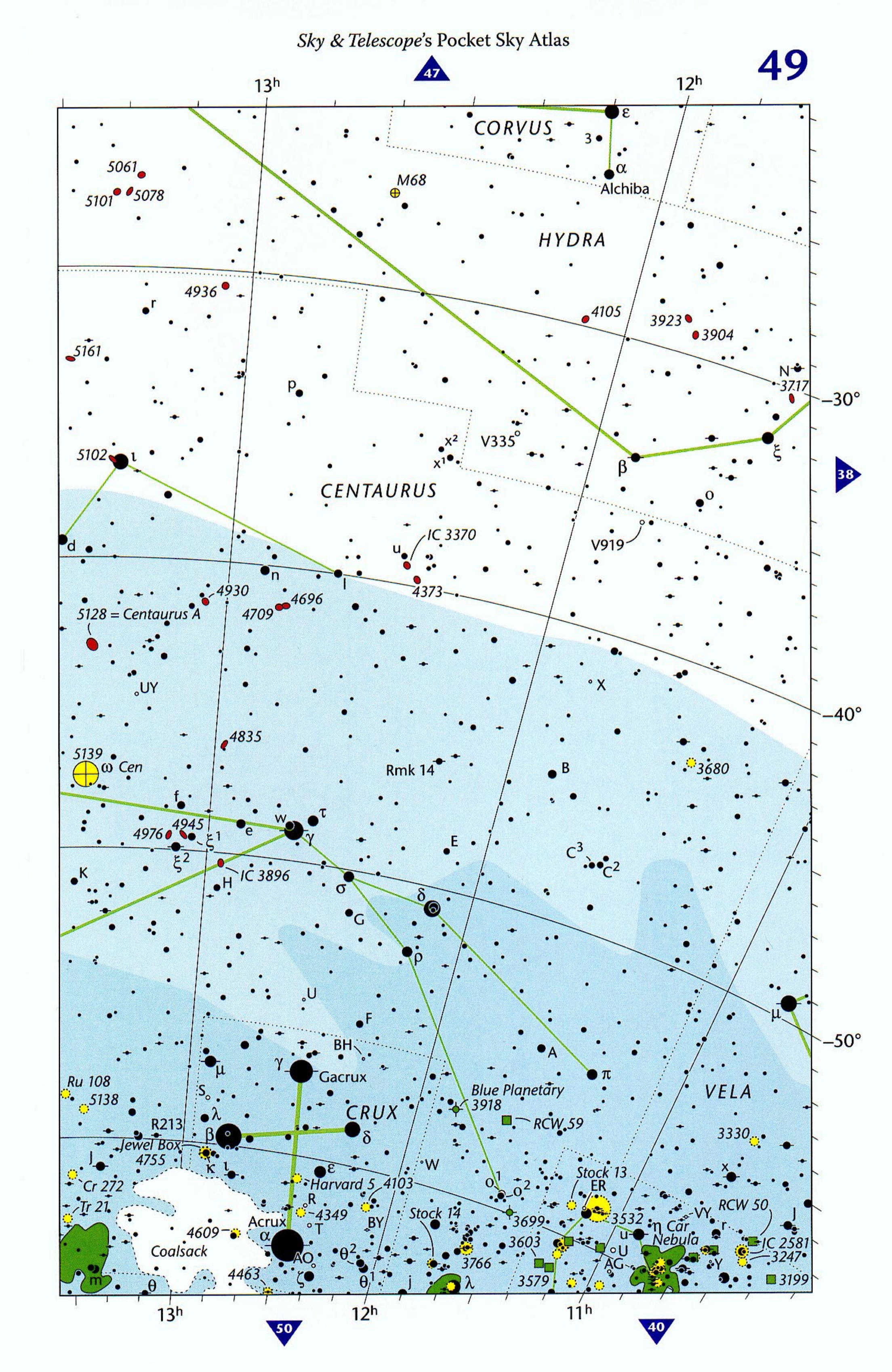
78 δ BK M61 4496A 4665 4457 16 7 4900 4527 4636 3C 273 4123 4845 4772 4643 4536 4179 4632 4517 SS(c) ΟΣ 256 4666 4592 η 180° 0° ζ 4753 Zaniah Autumnal Equinox VIRGO γ Porrima 4030 SW 4684 ECLIPTIC 4691 190° 4546 θ 4941 4593 74 4697 4731 4981 4775 S 200° 4958 4504 4995 4818 4699 χ g 4487 MCG-2-34-6 ψ 21 76 α 4939 4742 Spica 49 4781 Sombrero Galaxy 4700 M104 RU −10° 4802 68 Σ1669 Σ1604 4902 SV 4856 4984 3962 69 53 CORVUS 5054 5044 η δ Algorab 5247 5170 63 3887 61 Gienah η γ 4361 5018 4038 57 Antennae R 4027 55 4039 5068 31 Crt 3981 −20° 5084 ζ R γ ψ PK 303+40.1 ε β 3 Alchiba CRATER α 5061 M68 5101 5078 HYDRA Seashell Galaxy M83 4105 3923 3904 4936 r −30° 5161 CENTAURUS IC 4296 p V335 β x2 x1 o

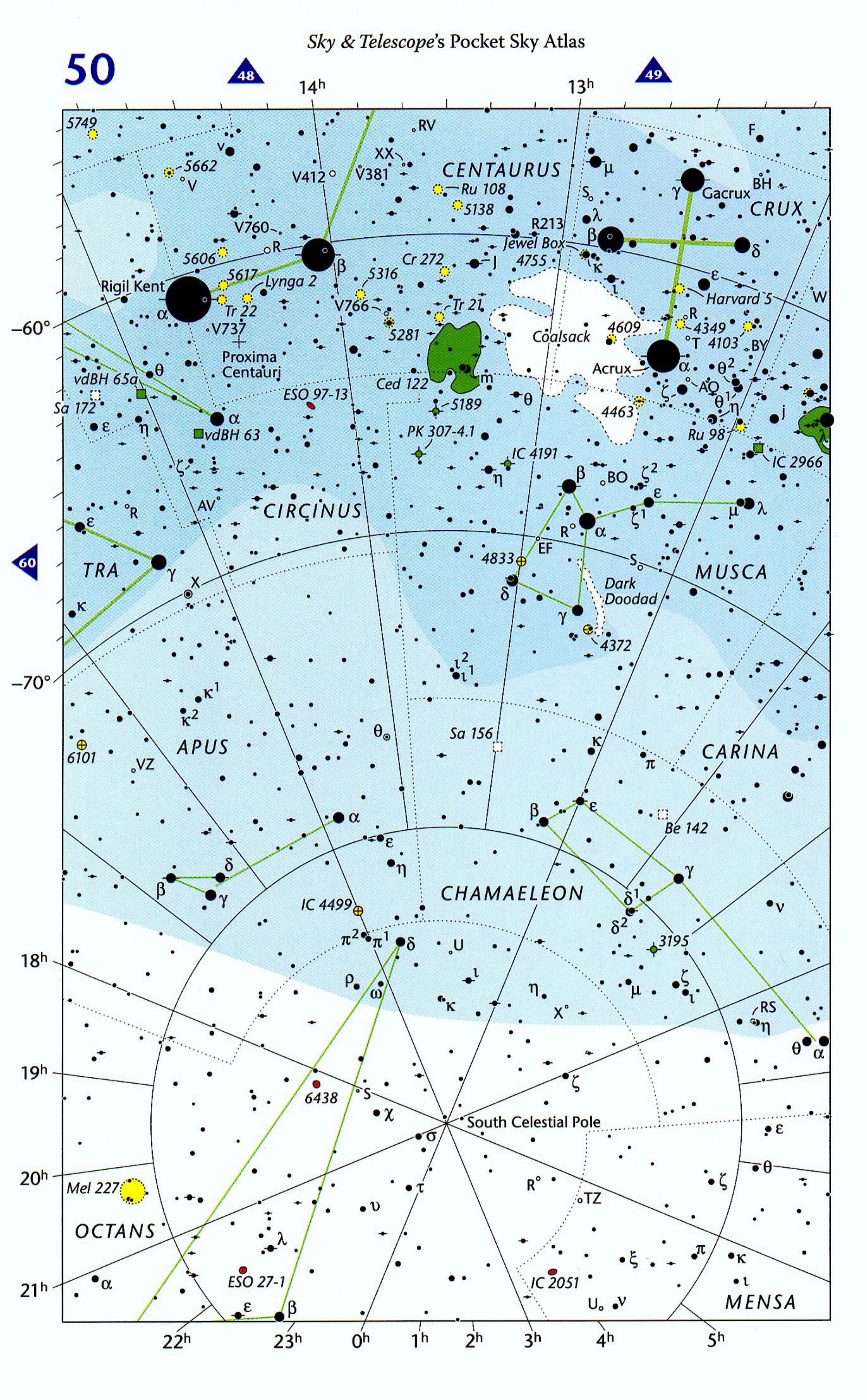
13h 12h

36

49


46
15h
14h
16h
−30°
−40°
−50°
59
60
50
HYDRA
LIBRA
CENTAURUS
LUPUS
NORMA
CIRCINUS
Seashell Galaxy
M83
5253
5161
IC 4296
5419
ESO 383-87
Menkent
V1002
5367
5408
5128
5483
5530
IC 4444
IC 4406
5786
ESO 270-17
5643
IC 4402
h4690
ω Cen
5139
5882
ESO 221-26
5460
5266
ESO 274-1
V744
5307
5286
5694
5824
GG
5927
5946
Hogg 18
V716
5749
5822
5823
5662
RV
XX
V381
V412
Ru 108
5138
RCW 103
RCW 102
6067
V760
5606
Cr 299
Cr 292
Pismis 20
5617
Tr 22
Lynga 2
Cr 272
5316
PK 322-2.1
Rigil Kent
V766
Tr 21
5281
6087
V737
Proxima
Centauri
Ced 122
h4813
vdBH 65a
6025
Sa 172
ESO 137-34


47
13h
12h
CORVUS
HYDRA
CENTAURUS
CRUX
VELA
M68
Alchiba
5061
5101
5078
4936
5161
4105
3923
3904
3717
-30°
5102
V335
38
IC 3370
V919
4930
4696
4709
4373
5128 = Centaurus A
UY
-40°
4835
5139
ω Cen
Rmk 14
3680
4976
4945
IC 3896
-50°
BH
Gacrux
Blue Planetary
3918
RCW 59
Ru 108
5138
R213
Jewel Box
4755
Cr 272
Tr 21
Harvard 5
4103
4349
Acrux
4609
Coalsack
4463
Stock 14
3766
3603
3579
3699
Stock 13
3532
η Car Nebula
RCW 50
IC 2581
3247
3199
3330
13h
12h
11h
50
40


48
49
60
14h
13h
-60°
-70°
18h
19h
20h
21h
22h
23h
0h
1h
2h
3h
4h
5h
CENTAURUS
CRUX
CIRCINUS
MUSCA
TRA
APUS
CARINA
CHAMAELEON
OCTANS
MENSA
Rigil Kent
Proxima Centauri
Gacrux
Acrux
Jewel Box
Coalsack
Dark Doodad
South Celestial Pole
Lynga 2
Harvard 5
Mel 227
ESO 97-13
ESO 27-1
IC 2051
IC 4499
IC 4191
IC 2966
PK 307-4.1
Ced 122
Cr 272
Tr 21
Tr 22
Ru 108
Ru 98
Sa 156
Sa 172
Be 142
vdBH 65a
vdBH 63
5749
5662
5606
5617
5316
5138
4755
5281
5189
4609
4349
4103
4463
4833
4372
3195
6101
6438

Charts 51–60

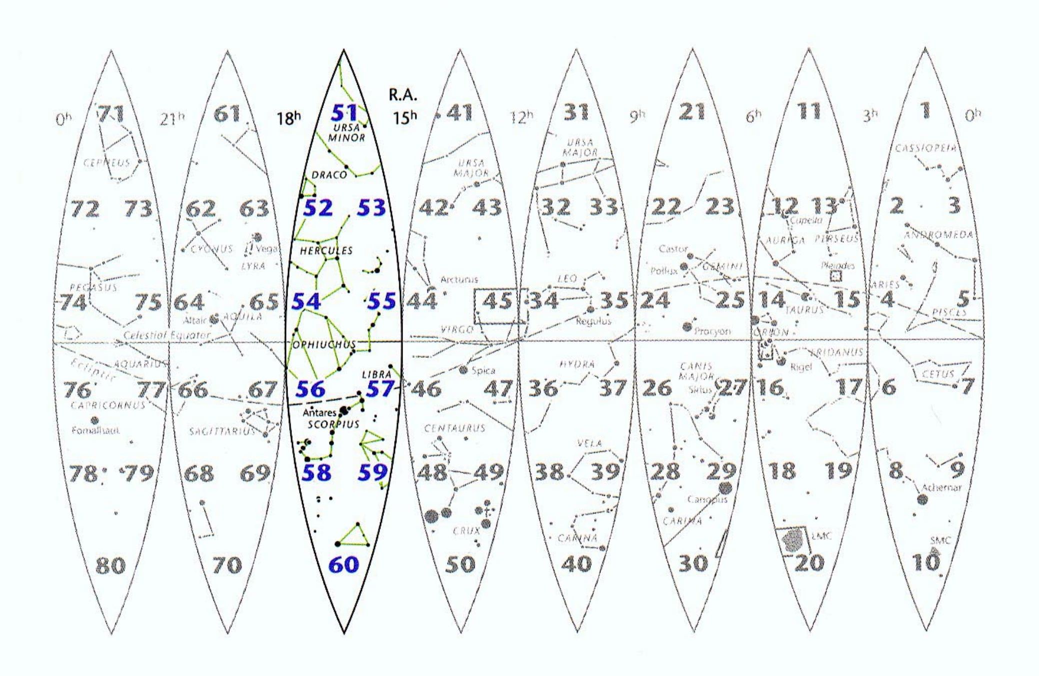
Right Ascension 15^h to 18^h

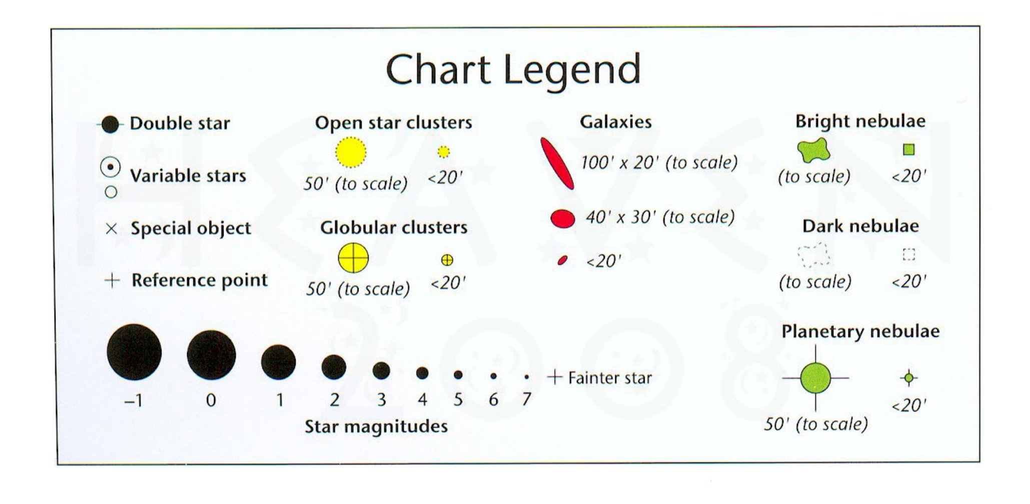
This section is highest in the night sky around these times:

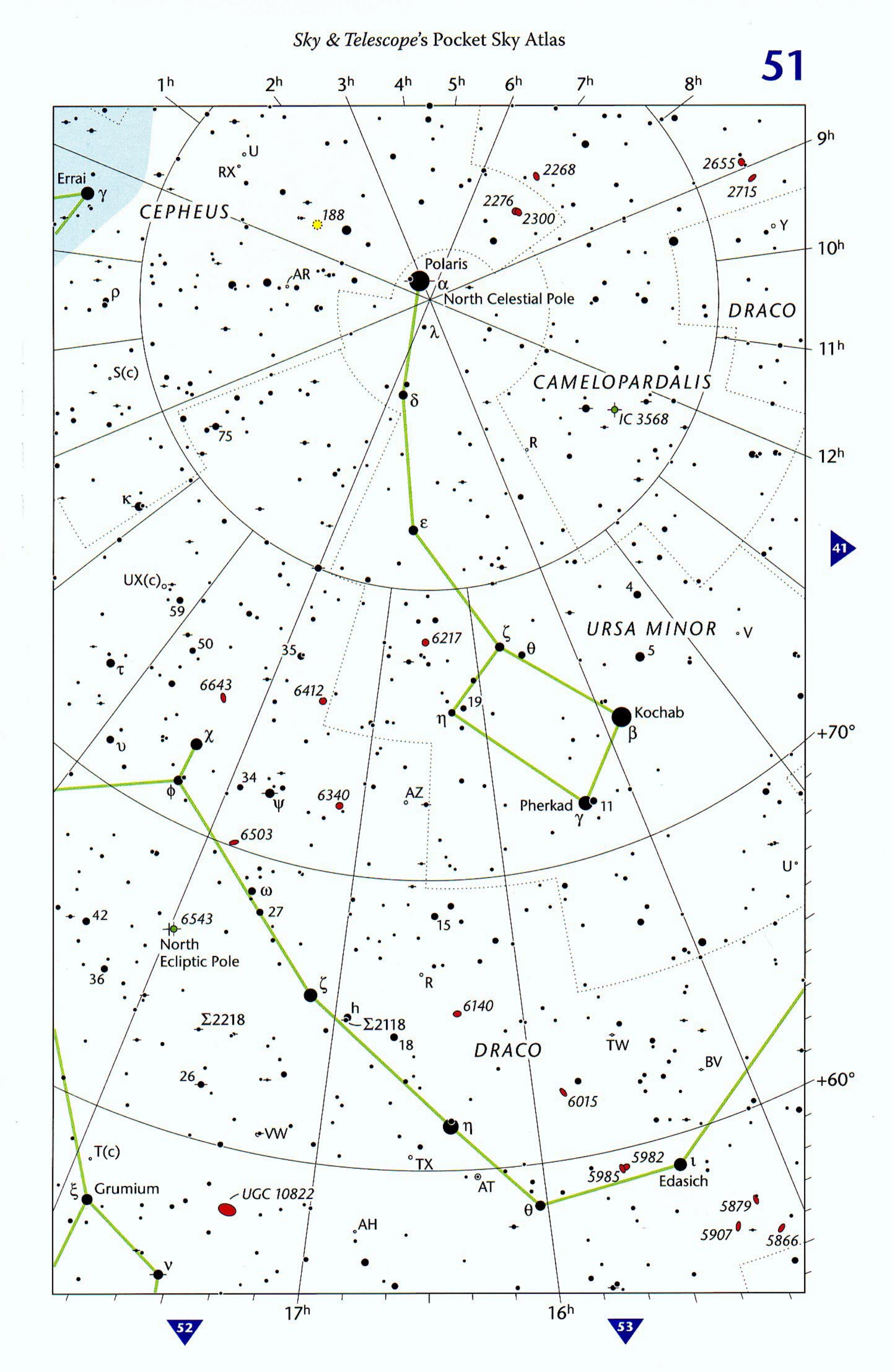
Evening: July

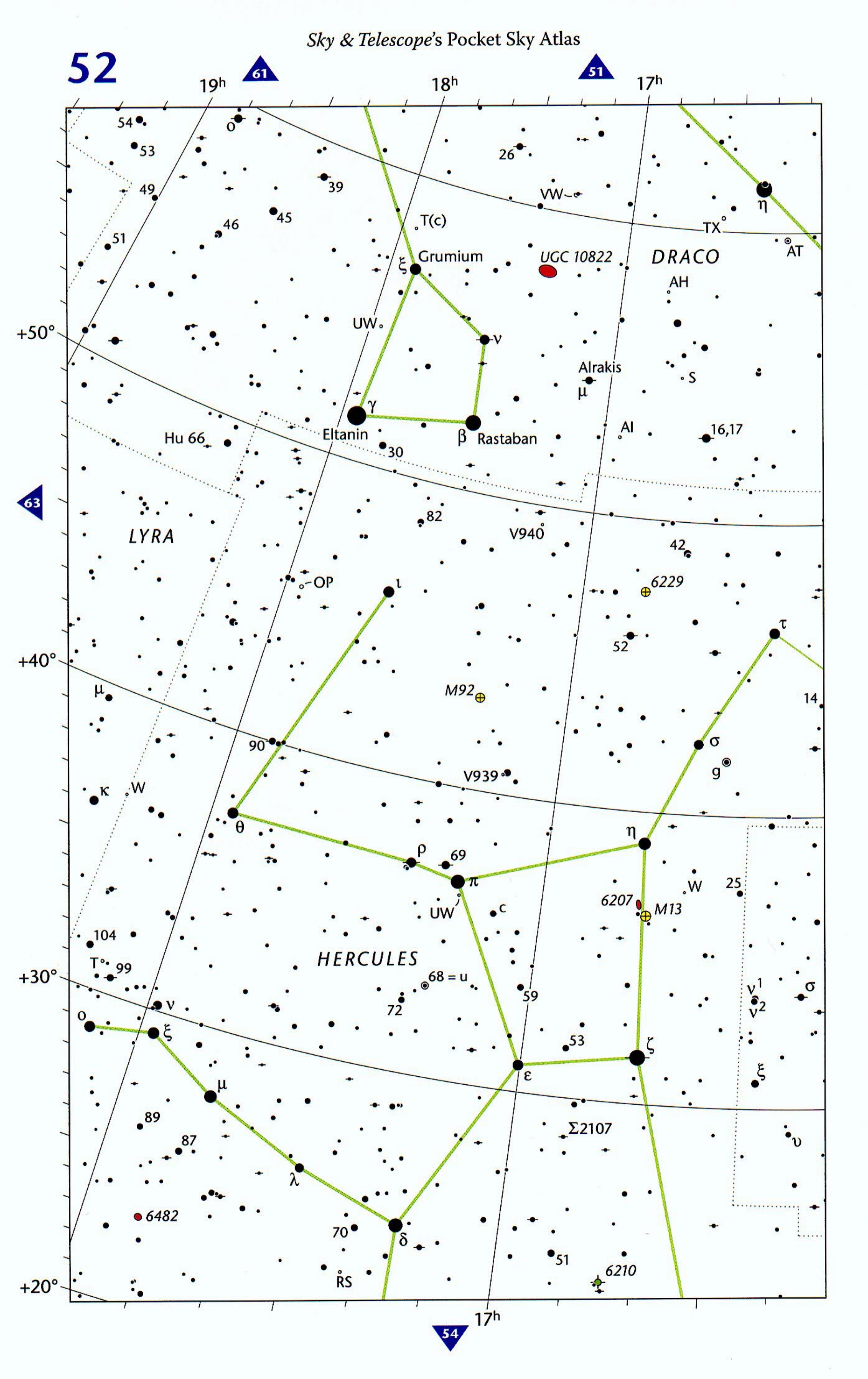
Midnight: May & June

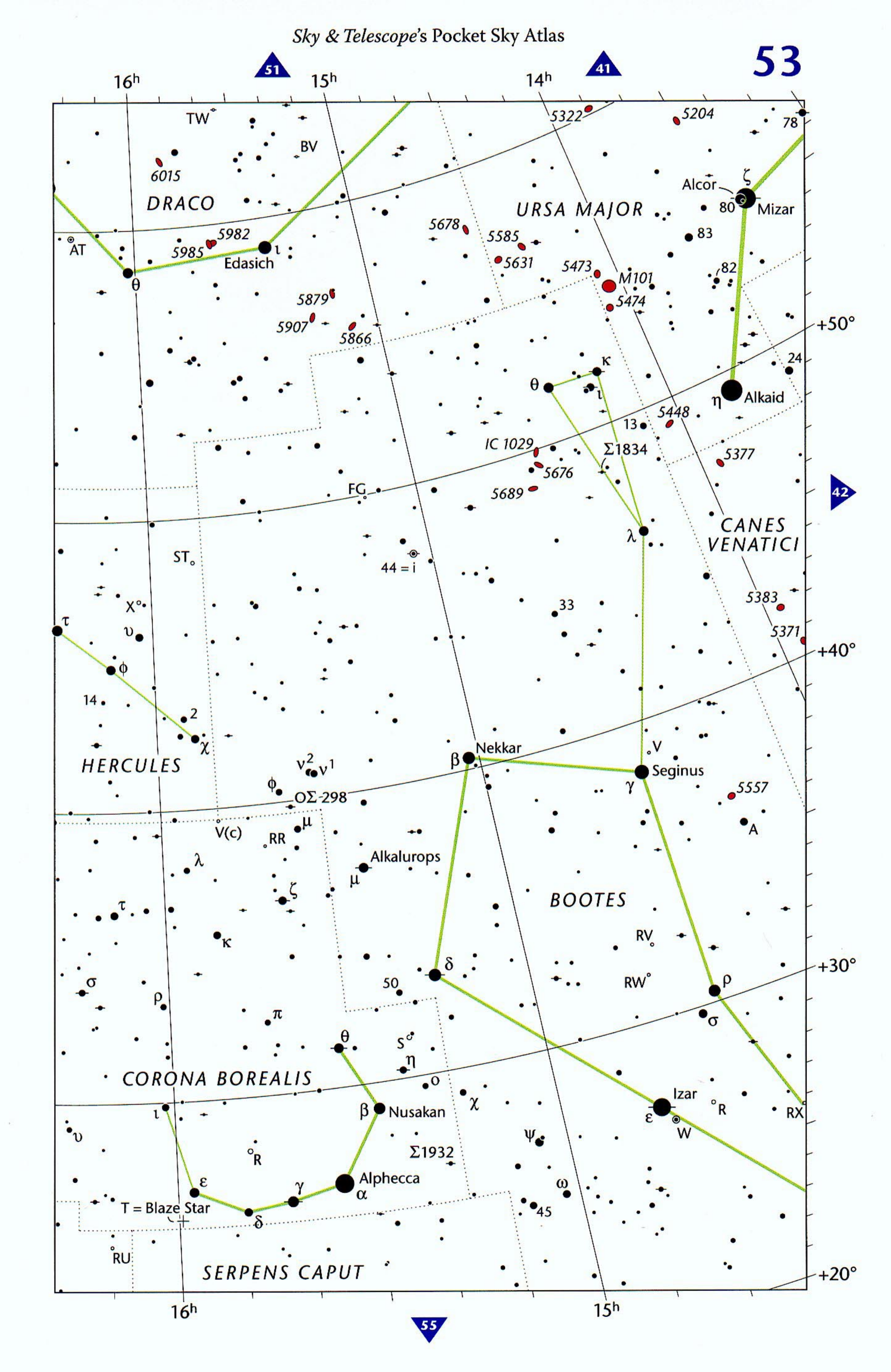
Morning: April

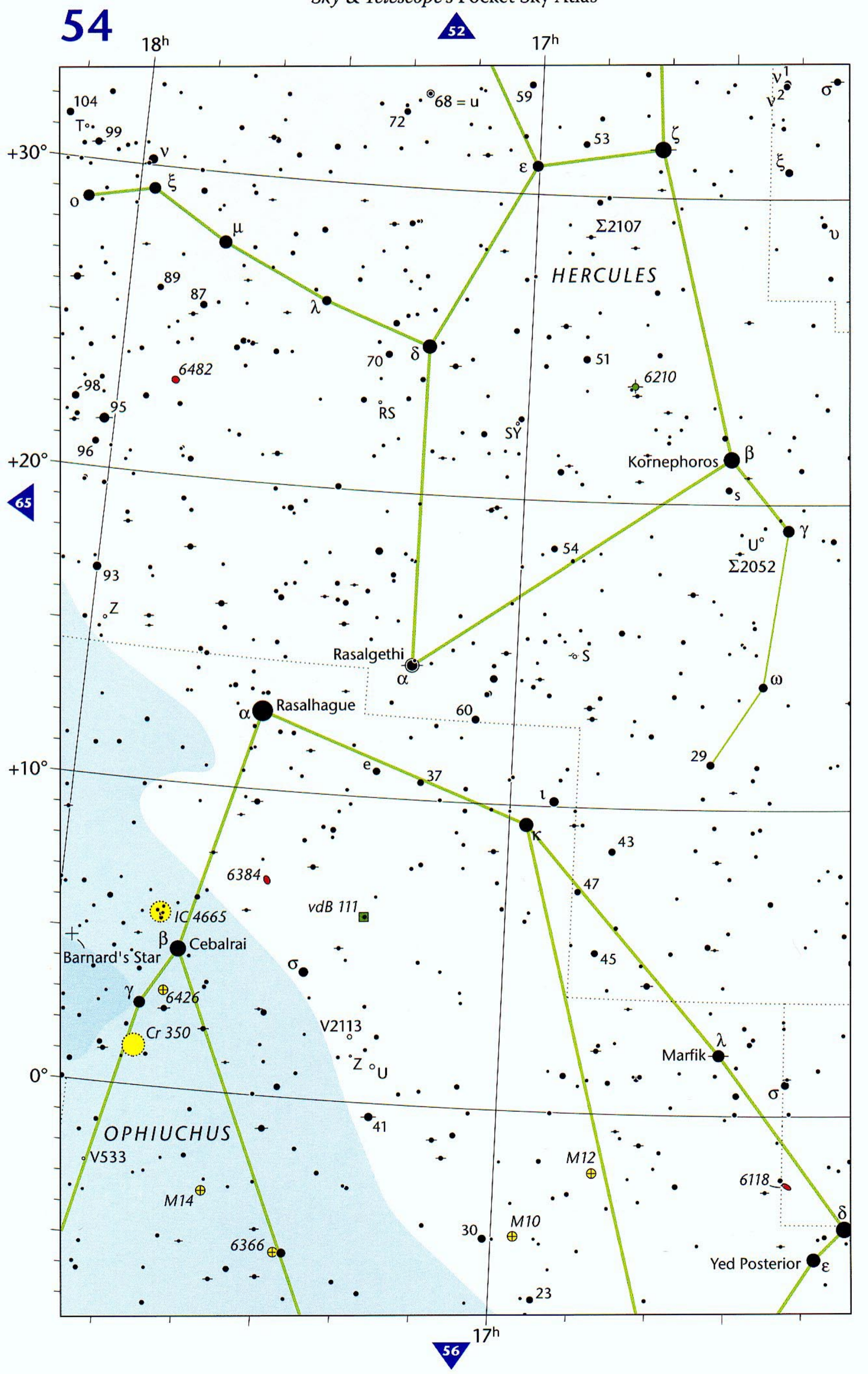


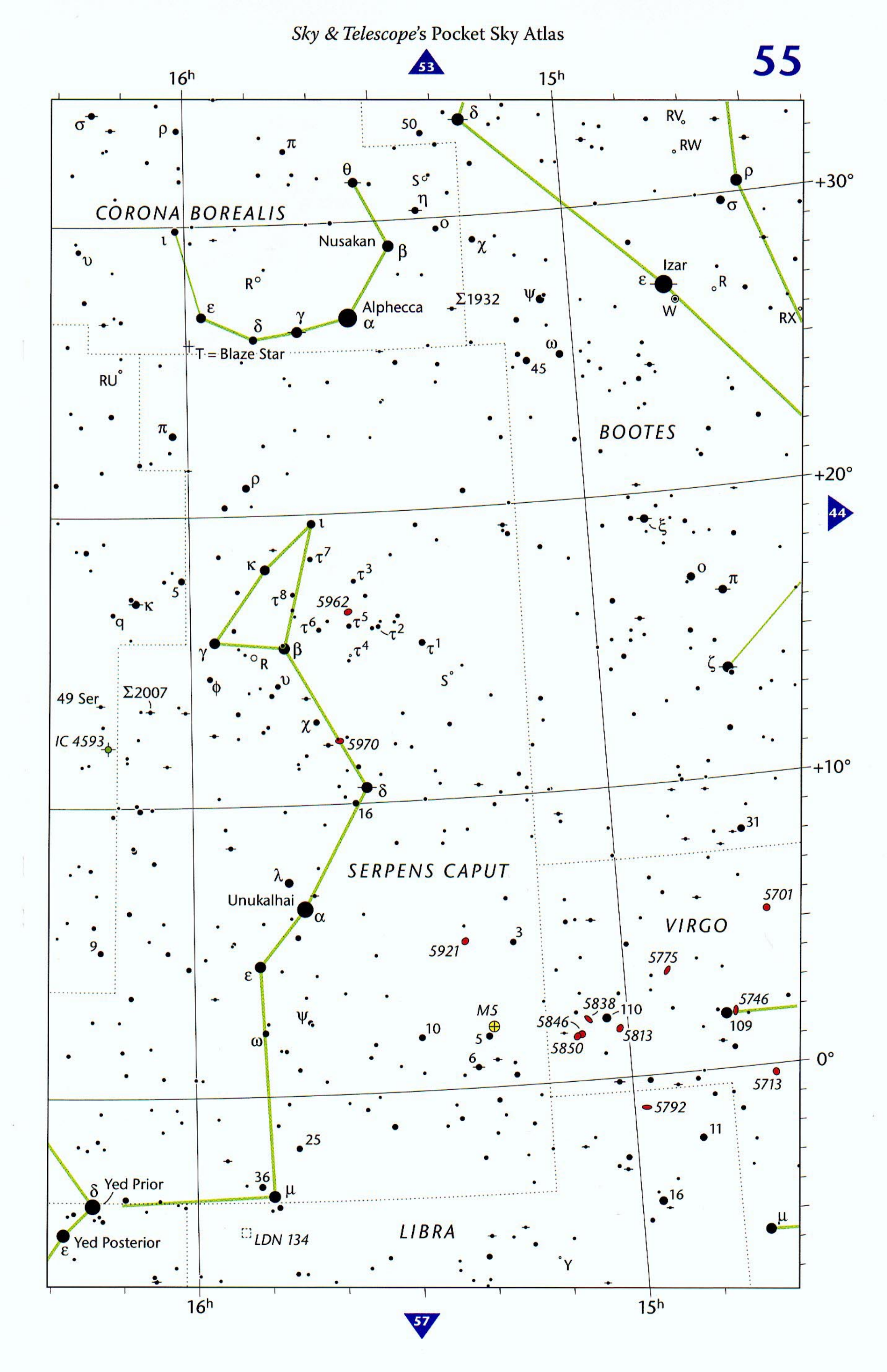

Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1
0
1
2
3
4
5
6
7
Fainter star
Star magnitudes


1h
2h
3h
4h
5h
6h
7h
8h
9h
10h
11h
12h
+70°
+60°
17h
16h
Errai
γ
CEPHEUS
U
RX
188
AR
ρ
S(c)
75
κ
UX(c)
59
50
35
τ
6643
6412
υ
χ
φ
34
ψ
6340
6503
ω
27
42
6543
North
Ecliptic Pole
36
ζ
h
Σ2118
Σ2218
18
26
VW
T(c)
ξ
Grumium
ν
UGC 10822
AH
TX
AT
η
θ
Polaris
α
North Celestial Pole
λ
δ
ε
2268
2276
2300
2655
2715
Y
DRACO
CAMELOPARDALIS
IC 3568
R
4
URSA MINOR
V
5
6217
ζ
θ
19
η
Kochab
β
AZ
Pherkad
γ
11
U
15
R
6140
DRACO
TW
BV
6015
5982
5985
ι
Edasich
5879
5907
5866
41
52
53


61
51
19h
18h
17h
63
54
+50°
+40°
+30°
+20°
DRACO
LYRA
HERCULES
Grumium
Eltanin
Rastaban
Alrakis
UGC 10822
M92
M13
6207
6229
6210
6482
Hu 66
Σ2107
V940
V939
68 = u


51
41
16h
15h
14h
DRACO
URSA MAJOR
CANES VENATICI
HERCULES
BOOTES
CORONA BOREALIS
SERPENS CAPUT
Edasich
Alcor
Mizar
Alkaid
M101
Nekkar
Seginus
Alkalurops
Izar
Nusakan
Alphecca
T = Blaze Star
+50°
+40°
+30°
+20°
42
55


52
18h
17h
+30°
+20°
+10°
0°
65
56
HERCULES
OPHIUCHUS
Kornephoros
Rasalgethi
Rasalhague
Cebalrai
Barnard's Star
Marfik
Yed Posterior
Σ2107
Σ2052
68 = u
6482
6210
6384
vdB 111
IC 4665
6426
Cr 350
V2113
V533
M14
6366
M12
M10
6118
RS
SY


53
16h
15h
CORONA BOREALIS
Nusakan
Alphecca
Izar
T = Blaze Star
Σ1932
BOOTES
+30°
+20°
+10°
0°
44
SERPENS CAPUT
Unukalhai
49 Ser
Σ2007
IC 4593
5962
5970
5921
M5
5838
5846
5850
5813
5775
5701
5746
5713
5792
VIRGO
LIBRA
Yed Prior
Yed Posterior
LDN 134
57

54

17h 16h

vdB 111 45 HERCULES 9

SERPENS CAPUT

σ Marfik λ

V2113

Z U σ

0° 41

M12 6118

Yed Prior δ

30 M10

M14 ε Yed Posterior

6366 OPHIUCHUS

23

67

υ 18 16

μ ψ

20 ζ Σ1999 ξ

−10° χ

V(c)

M107

6309

ν

Box Nebula 48

o

SERPENS CAUDA

η V1010

ξ Sabik 49

R φ

χ IC 4592

6356

M9 B64 IC 4601 ν β Graffias

B259 B41/43

LDN 219 (c) 6342 ψ ω1

6445 B61

B83a B268 ξ IC 4634 B45 250° ω ω2

−20° B84

6440 6235 δ

B63 M80

58 B67a 260° 6287 B46 IC 4604 ρ

B262 B57

ECLIPTIC 6369 6325 B44 IC 4603 o

6401 51 44 o

Snake Nebula 6284 6144 σ

θ vdB 107 Sh2-9 π

Pipe Nebula

LDN 1773 6355 36 M19 M4

BF Antares α

SGR 6293 13

6316 B244 τ

X 43 d ρ

B256

Galactic Center

6304

RR

Sh2-16 45 M62 SCORPIUS

−30° 6451 LDN 1710 LDN 1682

Butterfly Cluster Sh2-13

6425 M6 V449 B252 (c)

BM AH

6416 6383 27 ξ

V703 Tr 28 B53

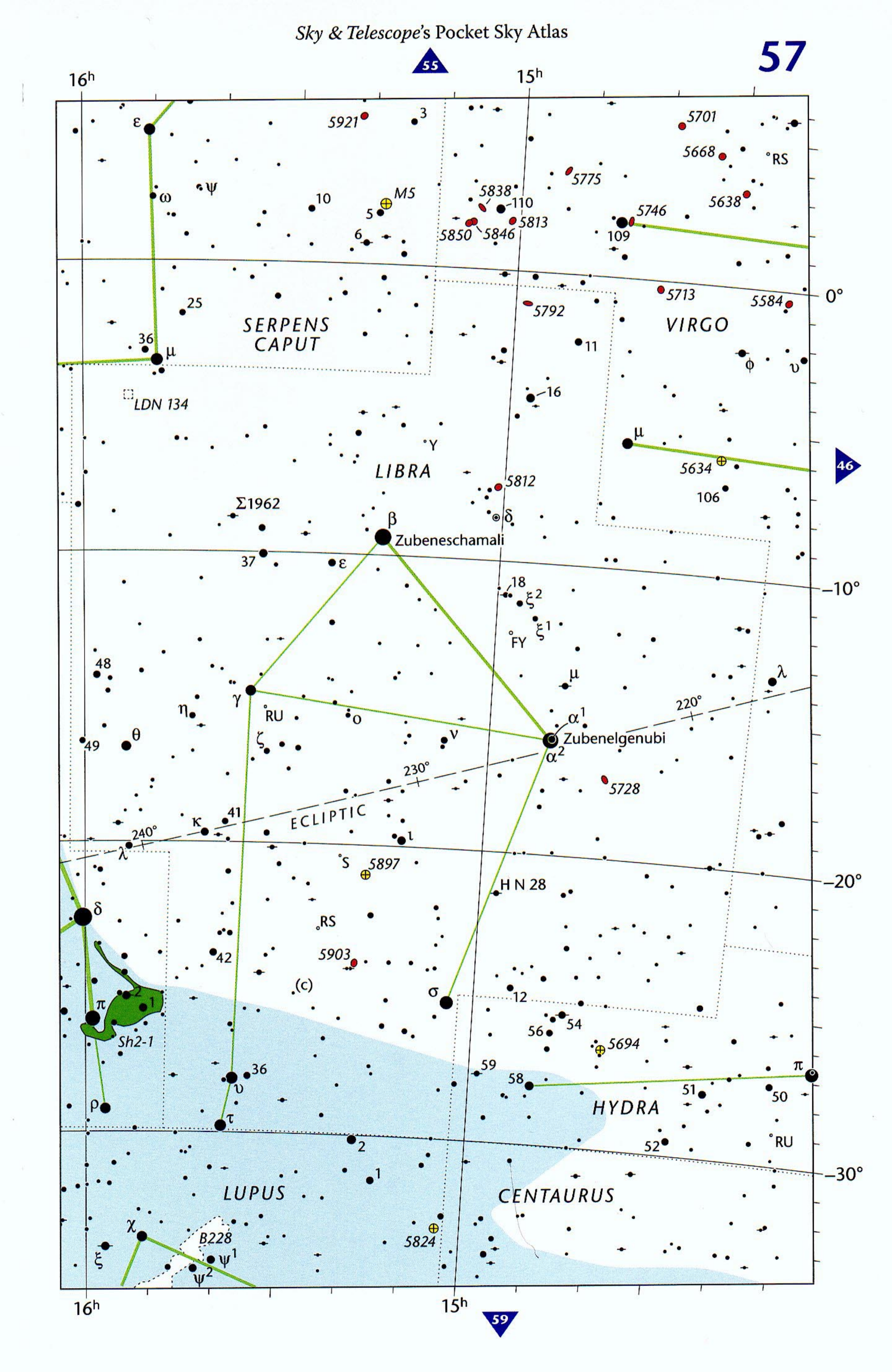
V482 RV

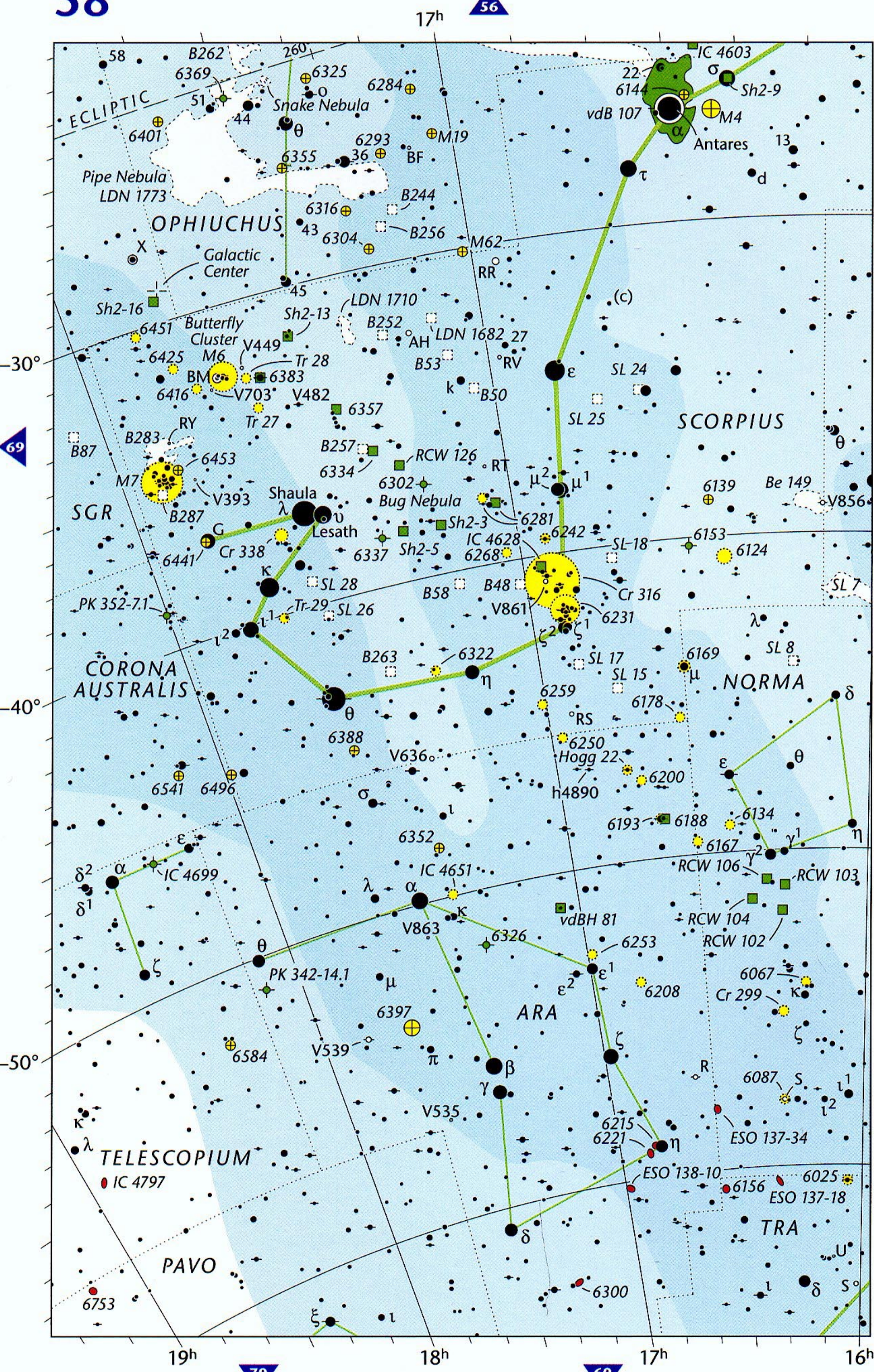
RY Tr 27 6357 k ε SL 24

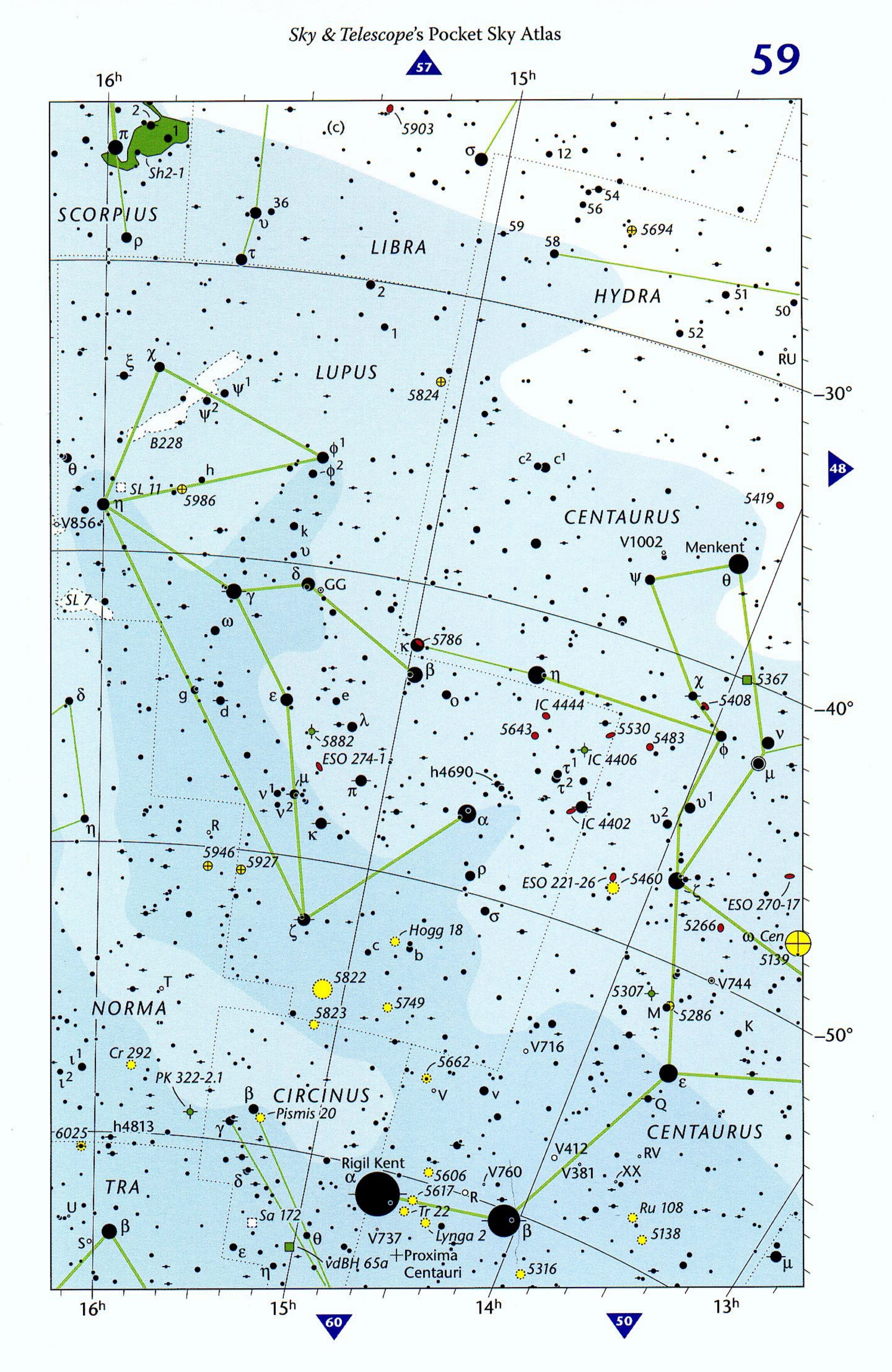
B283 B50

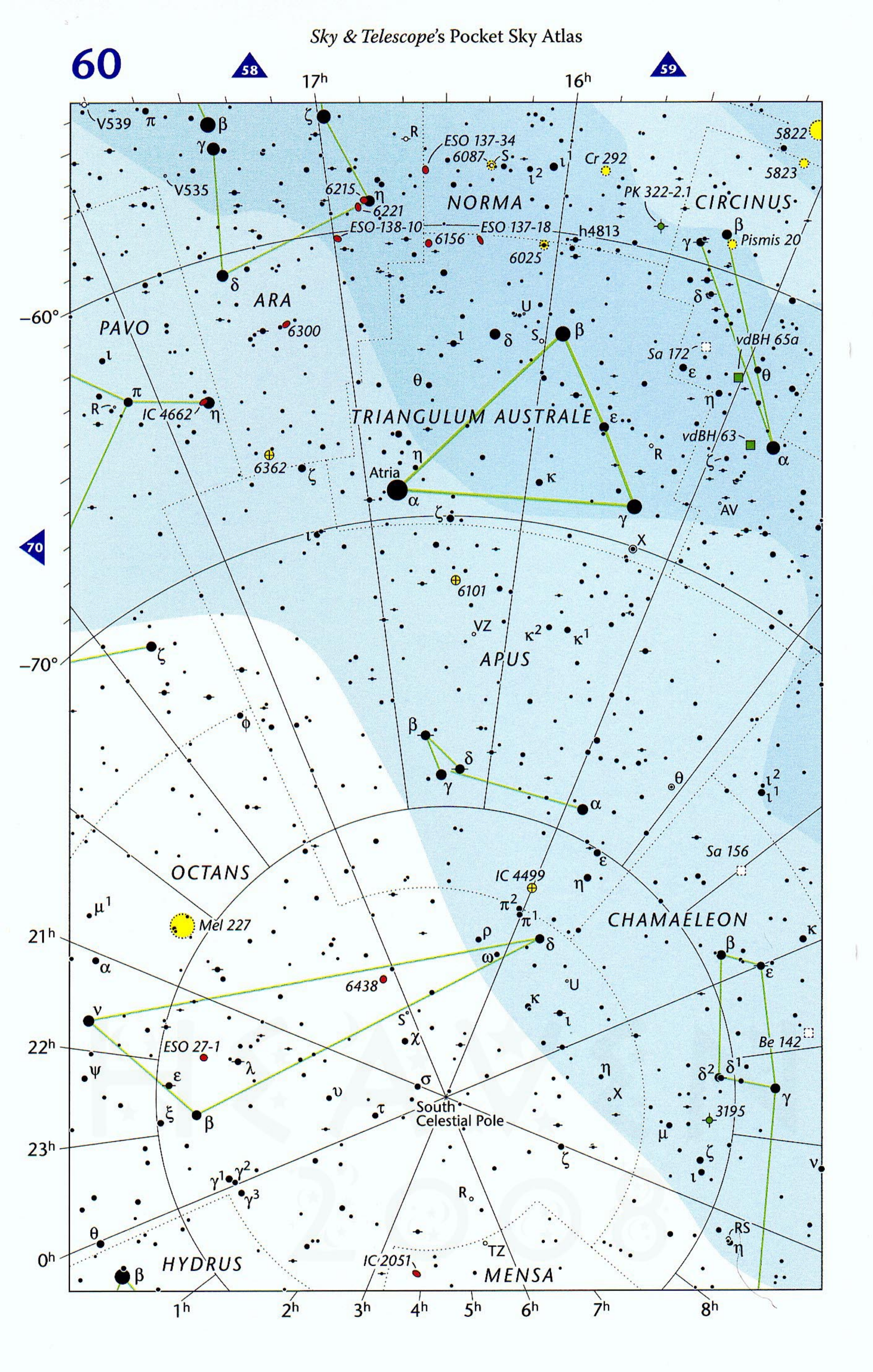
17h 16h

58


55
16h
15h
SERPENS CAPUT
VIRGO
LIBRA
Zubeneschamali
Zubenelgenubi
ECLIPTIC
HYDRA
LUPUS
CENTAURUS
M5
LDN 134
Σ1962
H N 28
Sh2-1
B228
0°
−10°
−20°
−30°
46
59


56
17h
ECLIPTIC
58
B262
6369
51
44
260
6325
o
Snake Nebula
6284
θ
6401
6293
M19
36
BF
6355
Pipe Nebula
LDN 1773
B244
6316
OPHIUCHUS
43
6304
B256
M62
X
Galactic
Center
RR
45
Sh2-16
LDN 1710
Sh2-13
B252
LDN 1682
27
AH
6451
Butterfly
Cluster
M6
V449
6425
Tr 28
BM
6383
B53
RV
6416
V703
V482
k
B50
6357
Tr 27
RY
B283
B87
6453
B257
RCW 126
6334
RT
M7
6302
V393
Shaula
Bug Nebula
λ
υ
Lesath
SGR
B287
G
Cr 338
6337
Sh2-5
Sh2-3
6441
κ
SL 28
PK 352-7.1
Tr 29
SL 26
ι1
ι2
CORONA
AUSTRALIS
B263
6322
η
θ
6388
V636
6541
6496
σ
ι
6352
ε
δ2
δ1
α
IC 4699
λ
α
IC 4651
V863
κ
θ
6326
ζ
PK 342-14.1
μ
ARA
6397
6584
V539
π
β
γ
V535
κ
λ
TELESCOPIUM
IC 4797
δ
PAVO
6753
ξ
ι
IC 4603
22
σ
6144
Sh2-9
vdB 107
M4
α
Antares
13
τ
d
(c)
ε
SL 24
SL 25
SCORPIUS
θ
μ2
μ1
6139
Be 149
V856
6281
6242
IC 4628
6268
SL 18
6153
6124
B48
B58
Cr 316
V861
6231
SL 7
ζ2
ζ1
λ
SL 17
SL 8
6169
SL 15
μ
NORMA
δ
6259
6178
RS
6250
Hogg 22
6200
h4890
ε
θ
6193
6188
6134
6167
γ2
γ1
η
RCW 106
RCW 103
vdBH 81
RCW 104
RCW 102
6253
ε1
ε2
6208
6067
Cr 299
κ
ζ
ζ
R
6087
S
ι1
ι2
6215
6221
η
ESO 137-34
ESO 138-10
6025
6156
ESO 137-18
TRA
U
δ
S
ι
6300
−30°
−40°
−50°
69
19h
18h
17h
16h
70
60


57
16h
15h
SCORPIUS
Sh2-1
5903
(c)
LIBRA
HYDRA
5694
LUPUS
5824
B228
SL 11
5986
V856
CENTAURUS
V1002
Menkent
5419
48
–30°
SL 7
GG
5786
5367
5408
–40°
IC 4444
5643
5530
5483
IC 4406
5882
ESO 274-1
h4690
IC 4402
5946
5927
ESO 221-26
5460
ESO 270-17
5266
ω Cen
5139
Hogg 18
5822
5749
5823
5307
5286
V744
–50°
NORMA
Cr 292
PK 322-2.1
5662
V716
CIRCINUS
Pismis 20
6025
h4813
V412
V381
RV
XX
Rigil Kent
5606
V760
5617
Tr 22
Lynga 2
V737
TRA
Sa 172
Ru 108
5138
vdBH 65a
Proxima Centauri
5316
14h
13h
60
50


58
59
70
17h
16h
−60°
−70°
NORMA
CIRCINUS
ARA
PAVO
TRIANGULUM AUSTRALE
APUS
OCTANS
CHAMAELEON
HYDRUS
MENSA
Atria
South Celestial Pole
ESO 137-34
6087
Cr 292
5822
5823
6215
6221
PK 322-2.1
ESO-138-10
ESO 137-18
h4813
6156
6025
Pismis 20
6300
Sa 172
vdBH 65a
IC 4662
vdBH 63
6362
6101
IC 4499
Sa 156
Mel 227
6438
ESO 27-1
Be 142
3195
IC 2051
V539
V535
21h
22h
23h
0h
1h
2h
3h
4h
5h
6h
7h
8h

Charts 61–70

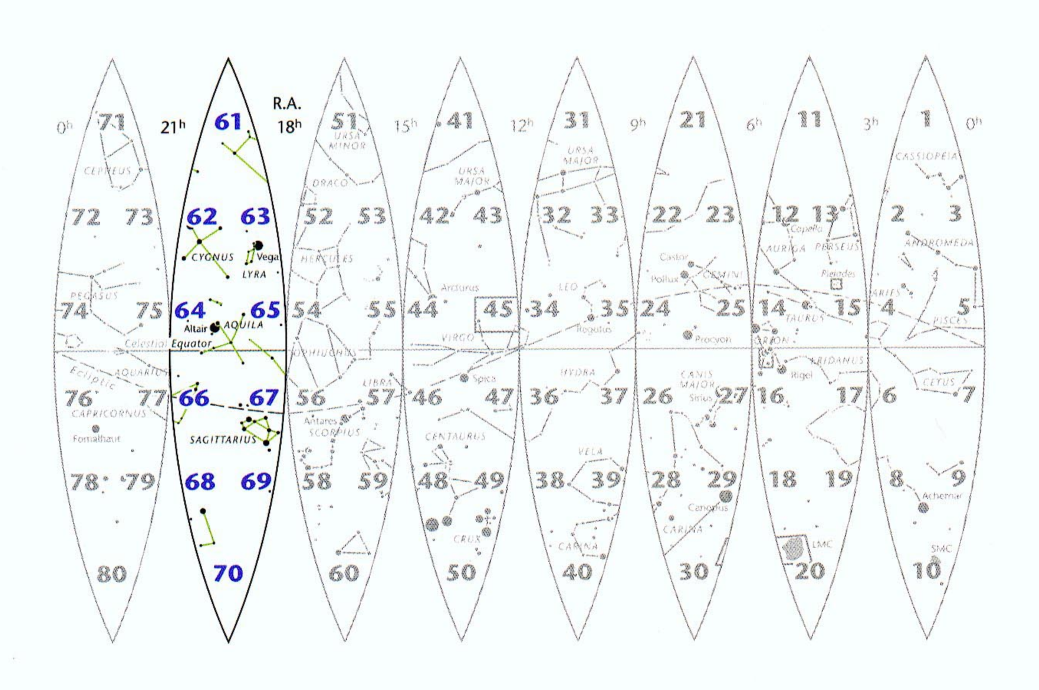
Right Ascension 18^h to 21^h

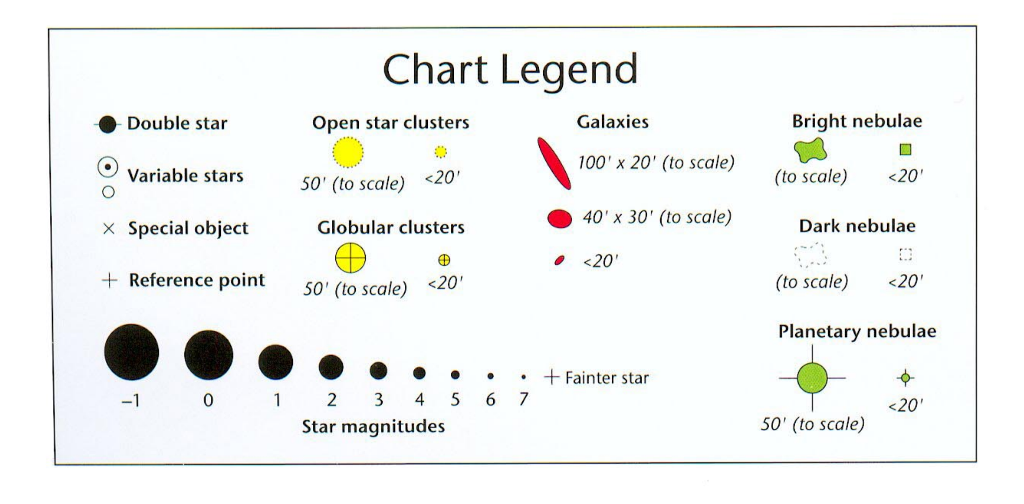
This section is highest in the night sky around these times:

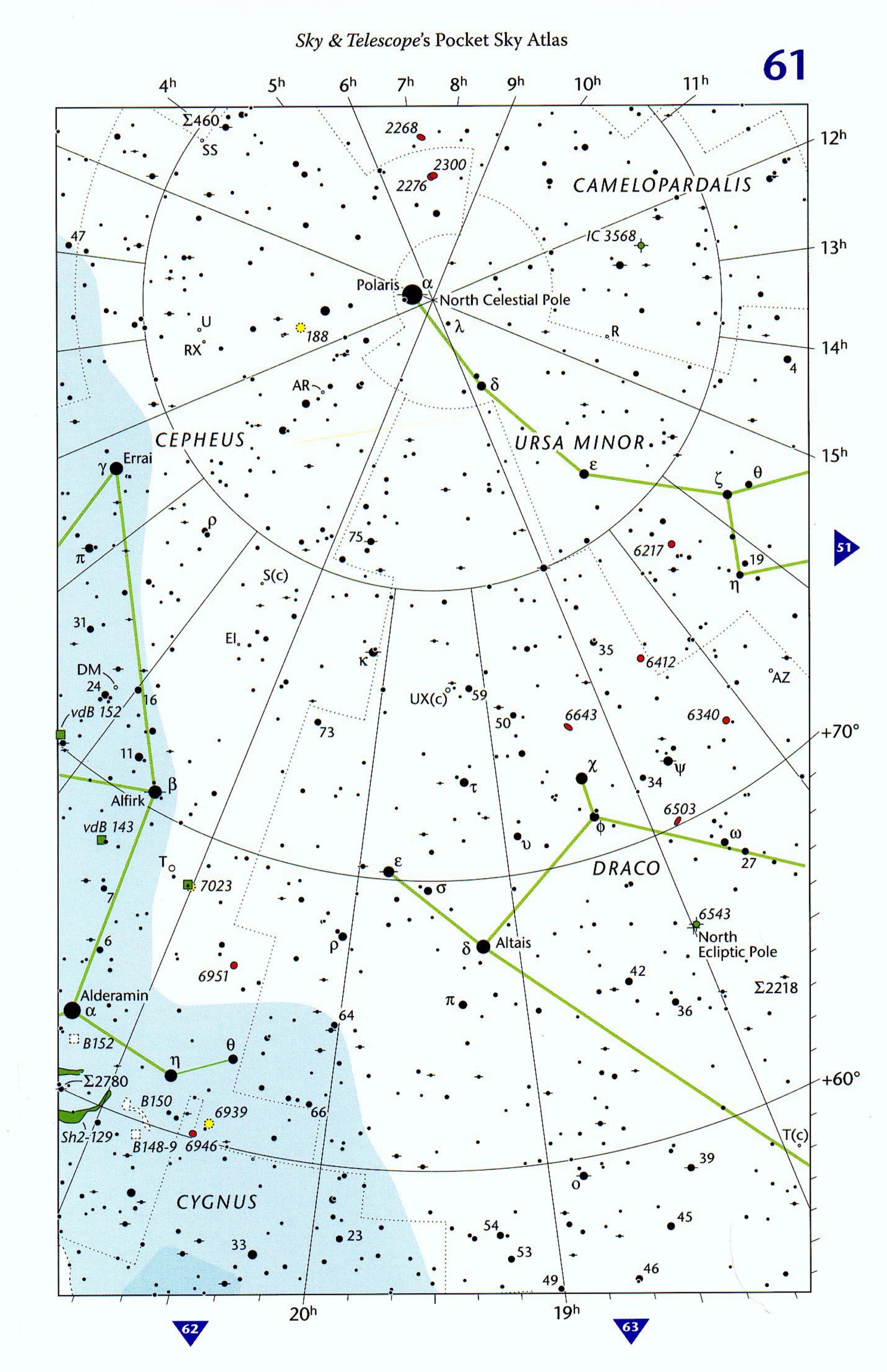
Evening: August & September

Midnight: July

Morning: May & June




Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50′ (to scale)
<20′
Globular clusters
50′ (to scale)
<20′
Galaxies
100′ x 20′ (to scale)
40′ x 30′ (to scale)
<20′
Bright nebulae
(to scale)
<20′
Dark nebulae
(to scale)
<20′
Planetary nebulae
50′ (to scale)
<20′
–1
0
1
2
3
4
5
6
7
Fainter star
Star magnitudes


CAMELOPARDALIS
CEPHEUS
URSA MINOR
DRACO
CYGNUS
Polaris
North Celestial Pole
North Ecliptic Pole
Errai
Alfirk
Alderamin
Altais
IC 3568
2268
2300
2276
188
6217
6412
6643
6340
6503
6543
7023
6951
6939
6946
vdB 152
vdB 143
B152
B150
B148-9
Sh2-129
Σ460
Σ2780
Σ2218
+70°
+60°
4h
5h
6h
7h
8h
9h
10h
11h
12h
13h
14h
15h
20h
19h
51
62
63

71 61 73 64

22h 21h 20h

+50° +40° +30° +20°

CEPHEUS

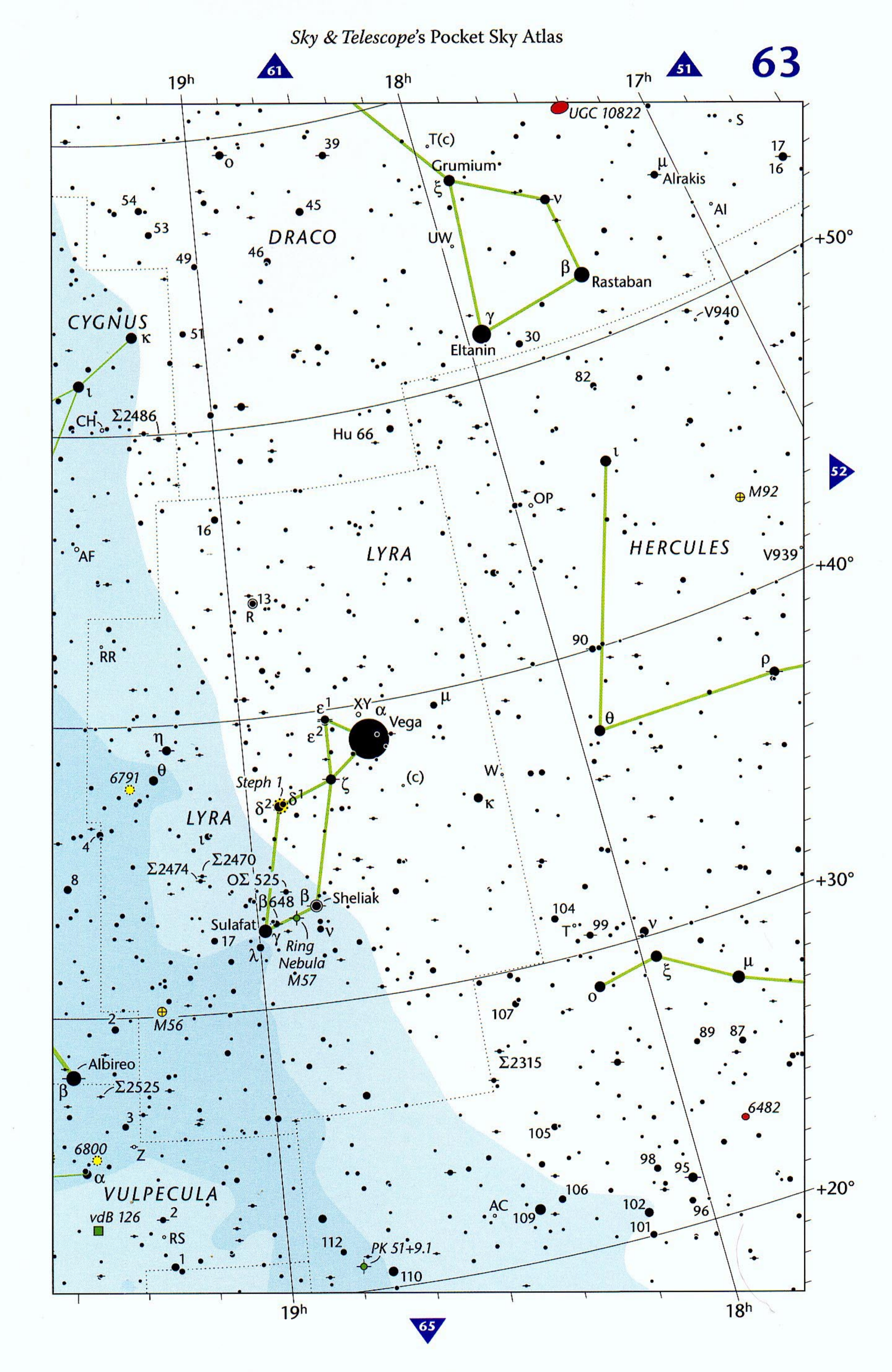
CYGNUS

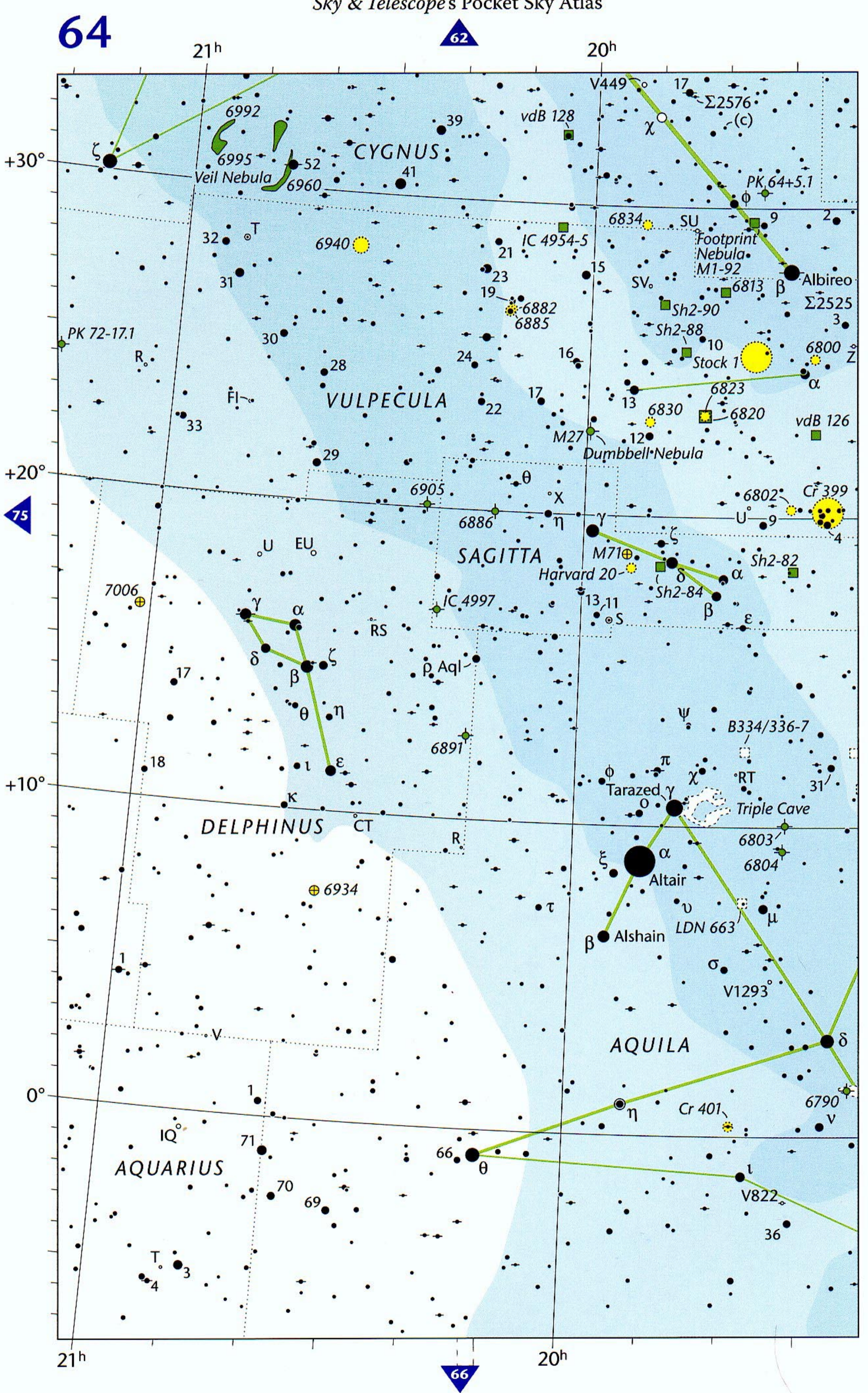
VULPECULA

DELPHINUS

vdB 140
6946
6939
B148-9
Σ2840
IC 1396
CN
β
RU
7128
B364
FZ
23
33
7243
7008
Le Gentil 3
B164
π1
7086
V1143
π2
Cocoon Nebula
IC 5146
vdB 145
B362
ψ
20
7209
B168
M39
51
Blinking Planetary 6826
7082
LDN 970
IC 1369
ω2
26
16
θ
CH
71
63
59
(c)
ω1
Z
R
V1339
W
ρ
7062
7048
IC 5076
U(c)
RT
ι
7039
60
ο2
75
55
Sh2-115
North America Nebula
ο1
30
7000
Deneb
6811
68
57
α
Sh2-112
ΟΣ 406
AF
77
7044
ξ
IC 5070
Pelican Nebula
+40°
74
V1070
B346
AX(c)
δ
7027
IC 5068
6866
6914
(c)
72
σ
ν
Northern Coalsack
RR
14
6910
Cr 419
IC 1311
61
70
τ
V367
RW
V973
Sadr
γ
6819
Piazzi's Flying Star
IC 1318
7063
Crescent Nebula
RS(c)
6888
PK 80-6.1
M29
19
Egg Nebula
Berk 86
P
υ
λ
vdB 133
Basel 6
22
IC 4996
Ced 174
X
25
15
Y
Sh2-104
27
ΟΣ 394
T
47
6883
4
35
6871
ε
Biur 2
Sh2-101
η
8
6992
V449
17
Σ2576
ζ
6995
39
vdB 128
χ
(c)
Veil Nebula
52
6960
41
PK 64+5.1
32
T
IC 4954-5
φ
6940
6834
SU
9
31
Footprint Nebula = M1-92
21
PK 72-17.1
23
15
Albireo
19
SV
β
R
30
6882
Sh2-90
6813
6885
Sh2-88
6800
28
24
10
16
Stock 1
Fl
33
13
α
17
6823
22
Dumbbell Nebula
6830
vdB 126
29
M27
12
6820
θ
6905
X
6886

21h 20h


61
51
19h
18h
17h
UGC 10822
S
T(c)
39
Grumium
17
16
μ
Alrakis
ξ
ν
54
45
53
Al
DRACO
UW
+50°
46
49
β
Rastaban
V940
CYGNUS
κ
γ
51
Eltanin
30
82
ι
CH
Σ2486
Hu 66
ι
52
OP
M92
16
AF
LYRA
HERCULES
V939
+40°
13
R
90
RR
ρ
ε1
XY
α
μ
Vega
ε2
θ
η
W
6791
θ
Steph 1
(c)
ζ
δ2
δ1
κ
LYRA
ι
4
Σ2474
Σ2470
8
OΣ 525
β648
β
Sheliak
+30°
104
Sulafat
T
99
ν
γ
ν
17
λ
Ring Nebula M57
ξ
μ
o
2
M56
107
89
87
Albireo
β
Σ2525
Σ2315
6482
3
105
6800
Z
α
98
95
VULPECULA
+20°
106
2
AC
102
vdB 126
109
96
RS
101
112
PK 51+9.1
1
110
19h
18h
65


62
21h
20h
+30°
+20°
+10°
0°
75
66
CYGNUS
VULPECULA
SAGITTA
DELPHINUS
AQUILA
AQUARIUS
Veil Nebula
6992
6995
6960
52
39
41
vdB 128
V449
17
Σ2576
(c)
χ
PK 64+5.1
φ
9
2
6834
SU
IC 4954-5
6940
32
T
31
21
23
15
Footprint Nebula M1-92
Albireo
β
SV
6813
19
6882
6885
Sh2-90
Σ2525
3
PK 72-17.1
30
Sh2-88
10
Stock 1
6800
Z
R
28
24
16
α
6823
13
FI
17
22
6830
6820
33
vdB 126
M27
12
Dumbbell Nebula
29
θ
6905
X
6802
Cr 399
η
6886
γ
U
9
4
U
EU
ζ
M71
Harvard 20
δ
Sh2-82
Sh2-84
α
7006
IC 4997
13
11
β
S
ε
RS
ρ Aql
17
ψ
B334/336-7
6891
18
ι
ε
φ
π
χ
RT
31
Tarazed
o
κ
Triple Cave
CT
6803
R
6804
ξ
Altair
6934
τ
υ
μ
LDN 663
Alshain
1
σ
V1293
V
δ
6790
1
Cr 401
ν
IQ
71
66
70
ι
V822
69
36
T
3
4

63

19h
18h

M57
β Sheliak
Sulafat
γ
β648
Ring Nebula
ν
17
λ
104
T
99
ν
+30°
M56
ξ
2
o
107
μ
LYRA
Σ2315
Σ2525
89
87
3
6800
Z
105
6482
α
VULPECULA
vdB 126
2
98
95
RS
AC
106
109
96
1
102
112
PK 51+9.1
+20°
Cr 399
Brocchi's Cluster
110
101
4
U
HERCULES
IQ
111
FF
93
OΣ 358
Z
ε
ζ
11
RX
LDN 684
ω
31
LDN 673
Σ2404
18
6709
PK 38+12.1
+10°
72
AQUILA
71
X
OPHIUCHUS
R
IC 4665
6781
6633
6572
β
19
Σ2375
IC 4756
Cebalrai
Σ2497
66
Barnard's Star
6756
73
6426
Alya
RY
6755
θ
74
γ
70
δ
67
Cr 350
21
Sh2-72
68
4
vdB 123
23
6760
TT
6790
0°
ν
59 = d
B138
LDN 617
6535
e
27
6741
SERPENS CAUDA
LDN 564
LDN 582
60
V533
B139
LDN 557
Sh2-64
η
ζ
LDN 581
14
15
B111
SCUTUM
LDN 567
β
λ
B119a
R
6751
f
B134
V(c)
12
η
M11
B103
IC 1276

19h
18h

54

67

64

20h

0°

−10°

−20°

−30°

77

AQUARIUS

AQUILA

CAPRICORNUS

SAGITTARIUS

MICROSCOPIUM

ECLIPTIC

310°

300°

290°

η θ ι ν 66 V822 36 27 23 21 Cr 401 6790 6760 B138 B139

V IQ 1 71 70 69 T 3 4

κ U W f 20 Pal 11

μ ε Albali

51 6814 37 (c)

α2 α1 ν ξ Algedi Dabih β2 β1 M72 M73 τ

Little Gem 6818 V505 Barnard's Galaxy 6822 61 55 54 (c) (c) υ T ρ1 ρ2 43 R

ρ π ο σ υ 56

η RT(c) M75

χ3 χ1 ψ 52

6907

24 ψ ω 60 ω 62 59 V1943

T RR

M55

h5218 δ 6925 γ β α

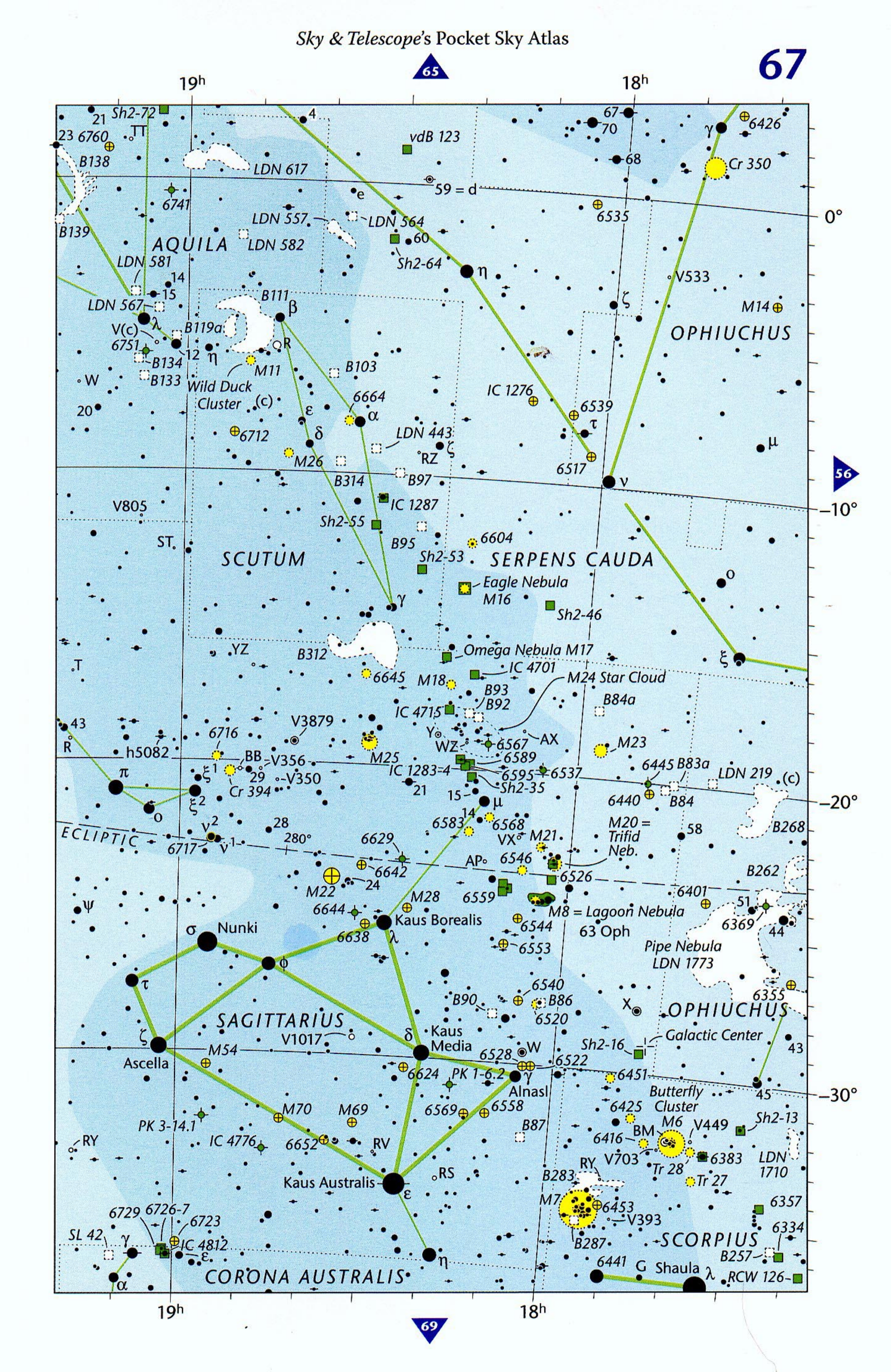
RY

θ2 θ1

21h

20h

68


65
19h
18h
AQUILA
OPHIUCHUS
SCUTUM
SERPENS CAUDA
SAGITTARIUS
SCORPIUS
CORONA AUSTRALIS
ECLIPTIC
0°
–10°
–20°
–30°
56
69
Sh2-72
LDN 617
vdB 123
59 = d
Cr 350
6426
6535
6760
B138
B139
6741
LDN 557
LDN 564
LDN 582
LDN 581
LDN 567
Sh2-64
V533
M14
B111
B119a
V(c)
6751
B134
B133
M11
Wild Duck Cluster
B103
IC 1276
6539
6664
6712
LDN 443
RZ
M26
B314
B97
6517
IC 1287
V805
Sh2-55
B95
6604
Sh2-53
Eagle Nebula M16
Sh2-46
B312
Omega Nebula M17
6645
M18
IC 4701
M24 Star Cloud
B93
B92
B84a
IC 4715
V3879
6716
h5082
BB
V356
V350
Cr 394
M25
WZ
6567
AX
M23
6589
IC 1283-4
6595
6537
Sh2-35
6445
B83a
LDN 219
6440
B84
6583
6568
M20 = Trifid Neb.
B268
6717
280°
6629
VX
M21
6642
AP
6546
6526
B262
M22
6559
6401
M28
6644
Kaus Borealis
M8 = Lagoon Nebula
6369
6638
6544
63 Oph
Nunki
6553
Pipe Nebula LDN 1773
6355
6540
B90
B86
6520
V1017
Kaus Media
Galactic Center
Sh2-16
M54
Ascella
6528
6522
6624
PK 1-6.2
Alnasl
6451
Butterfly Cluster
M70
M69
6569
6558
6425
M6
V449
Sh2-13
PK 3-14.1
IC 4776
6652
B87
6416
BM
6383
LDN 1710
V703
Tr 28
Tr 27
Kaus Australis
RS
RY
B283
M7
6453
V393
6357
6729
6726-7
6723
IC 4812
SL 42
B287
6334
B257
6441
Shaula
RCW 126

66
21h
20h
−20°
−30°
−40°
−50°
79
CAPRICORNUS
6907
60
ω
59
ψ
24
V1943
62
ω
T
RR
M55
52
h5218
δ
6925
γ
β
α
θ2
θ1
ε
MICROSCOPIUM
SAGITTARIUS
RT
ζ
Lacaille
8760
U
ι
κ1
RU
κ2
η
6902
θ2
θ1
ξ
CF
ι
ν
R
ζ
T
α
ι
6861
6868
7049
7041
TELESCOPIUM
R
7145
7144
ι
η
ξ
IC 4889
Δ227
μ
θ
RR
μ
ESO 185-54
ν
IC 5152
γ
INDUS
α
Peacock
7090
IC 4901
δ
7141
β
S
X
GRUS
φ1
PAVO
ε
φ2
π
ρ
7205
κ1
22h
21h
20h
80
70

19h 18h

ECLIPTIC

6717 28 280° 6642 24 M22 6629 6644 M28 6638 15 14 6568 6583 AP VX 6546 M21 6445 6440 −20°

M20 = Trifid Nebula 6526 6559 6544 M8 = Lagoon Nebula 6553 63 Oph

Nunki Kaus Borealis

SAGITTARIUS

Ascella M54 V1017 Kaus Media 6624 PK 1-6.2 6528 6522 W X 6540 6520 B90 B86 Sh2-16 Galactic Center 6451

RY PK 3-14.1 IC 4776 M70 M69 6652 RV 6569 6558 Alnasl B87 6425 Butterfly Cluster −30°

Kaus Australis RS 6416 BM M6 V449 Tr 28 V703 RY B283 6383

58

6729 6726-7 6723 SL 42 IC 4812 M7 B287 6453 V393 Tr 27 6357

PK 352-7.1 6441 G Shaula Lesath Cr 338 B257

Rukbat

CORONA AUSTRALIS

V681 6337 SL 28 Tr 29 Sh2-5 SL 26

Arkab

SCORPIUS

6541 6496 B263 B58 −40°

IC 4699 6388 6322

V636 6259 6250

BL 6352 IC 4651 h4890

PK 342-14.1 6584 V863

IC 4797

TELESCOPIUM

V539 6397 6326 vdBH 81 −50°

6753

PAVO

ARA

6253 6208 V535

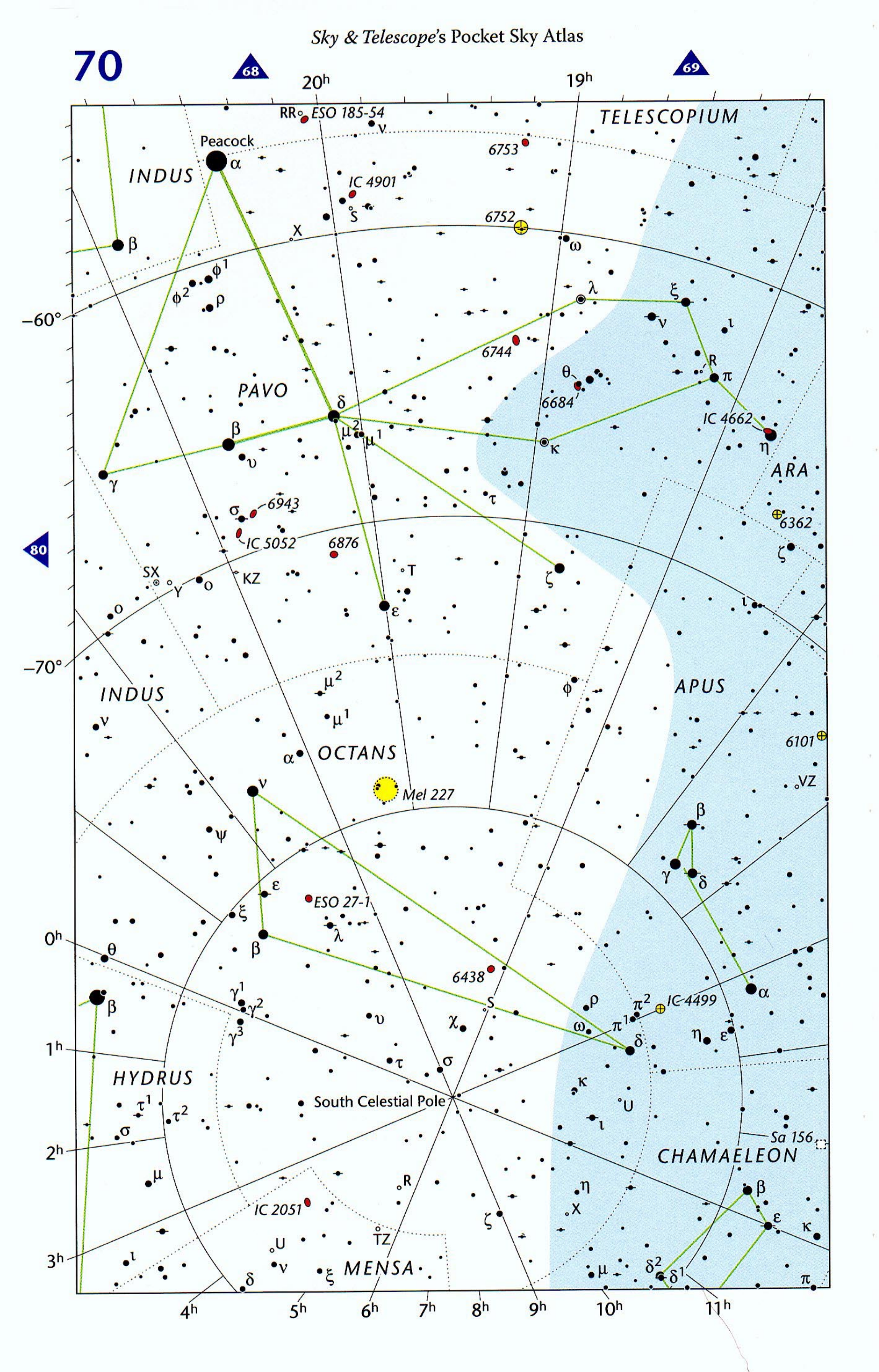
6752

R

19h 18h 17h

70

60


68
69
80
20h
19h
TELESCOPIUM
INDUS
PAVO
ARA
APUS
OCTANS
HYDRUS
CHAMAELEON
MENSA
Peacock
RR ESO 185-54
6753
IC 4901
6752
6744
6684
IC 4662
6943
IC 5052
6876
6362
6101
VZ
Mel 227
ESO 27-1
6438
IC 4499
Sa 156
South Celestial Pole
IC 2051
SX
KZ
TZ
−60°
−70°
0h
1h
2h
3h
4h
5h
6h
7h
8h
9h
10h
11h

Charts 71–80

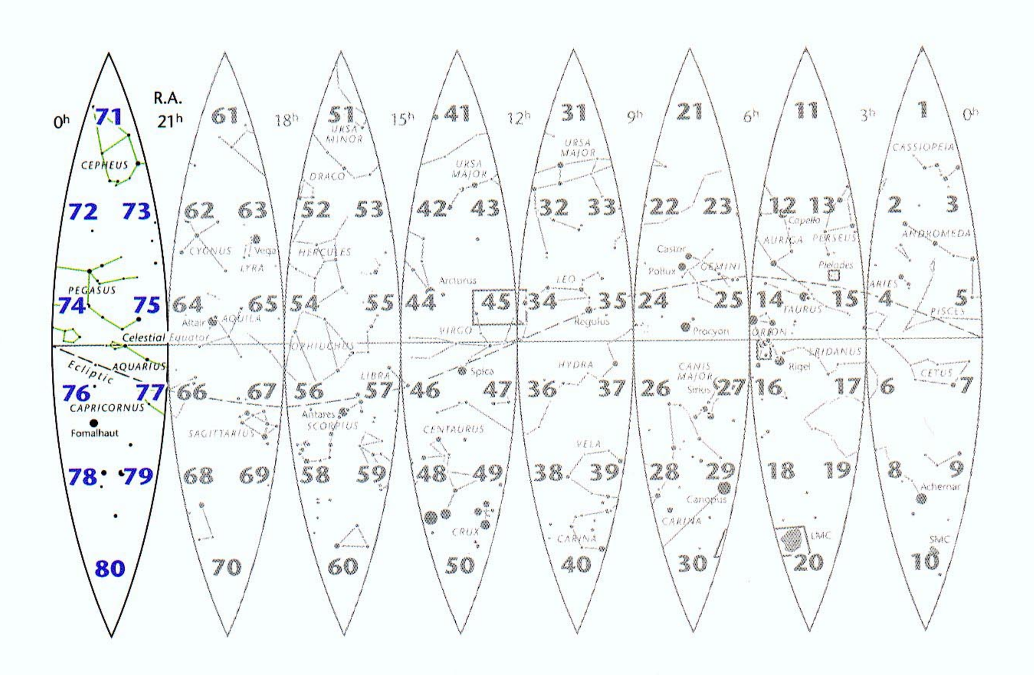
Right Ascension 21^h to 0^h

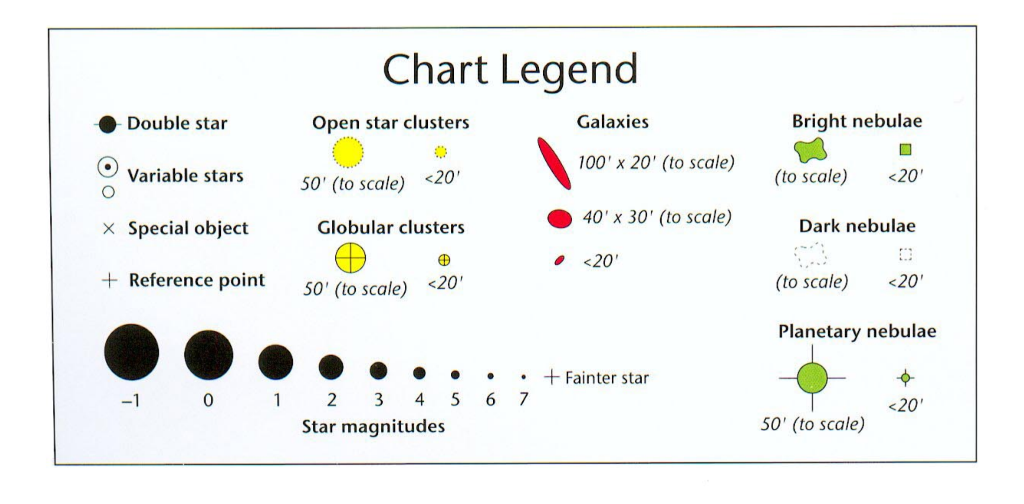
This section is highest in the night sky around these times:

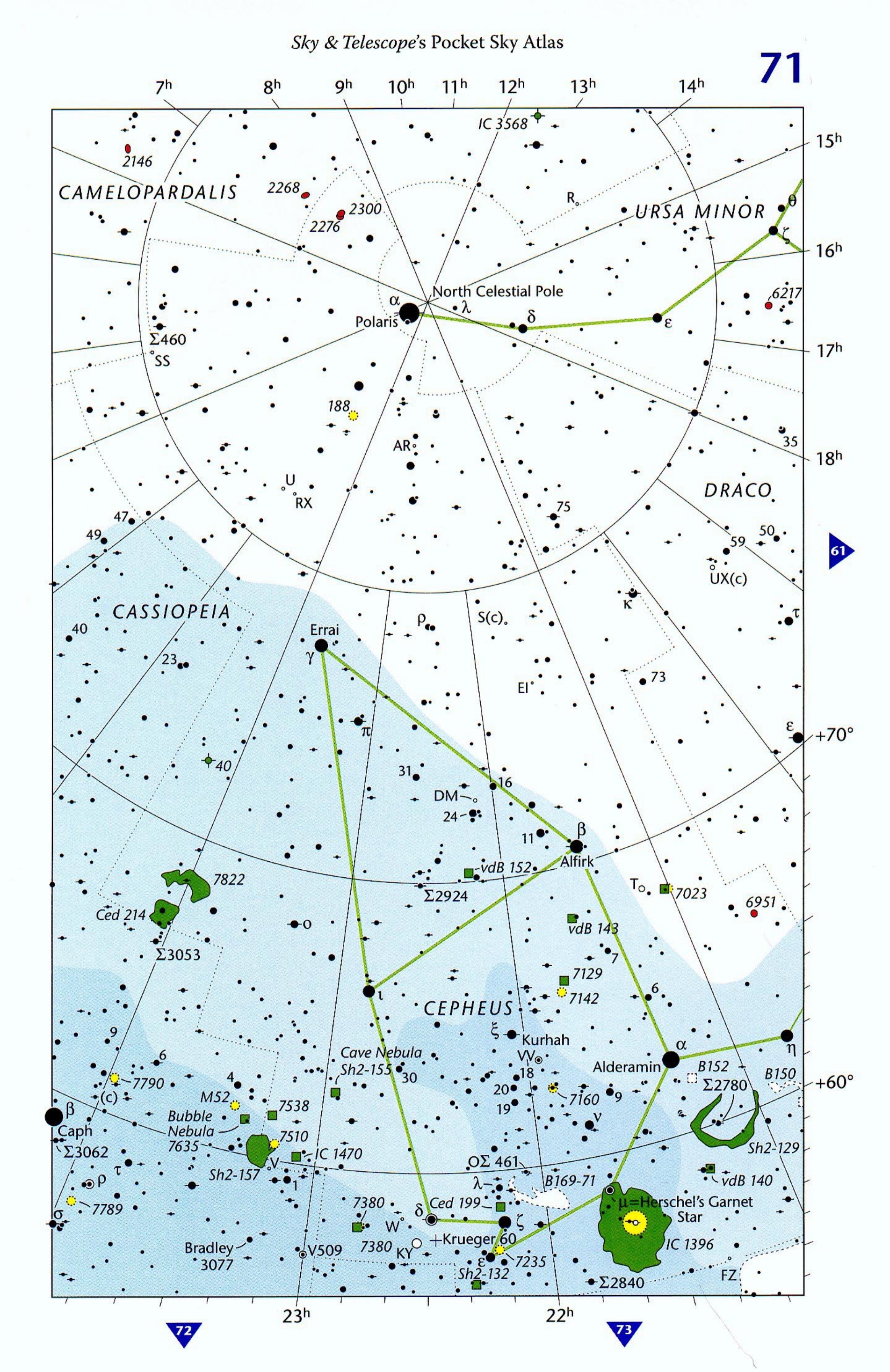
Evening: October

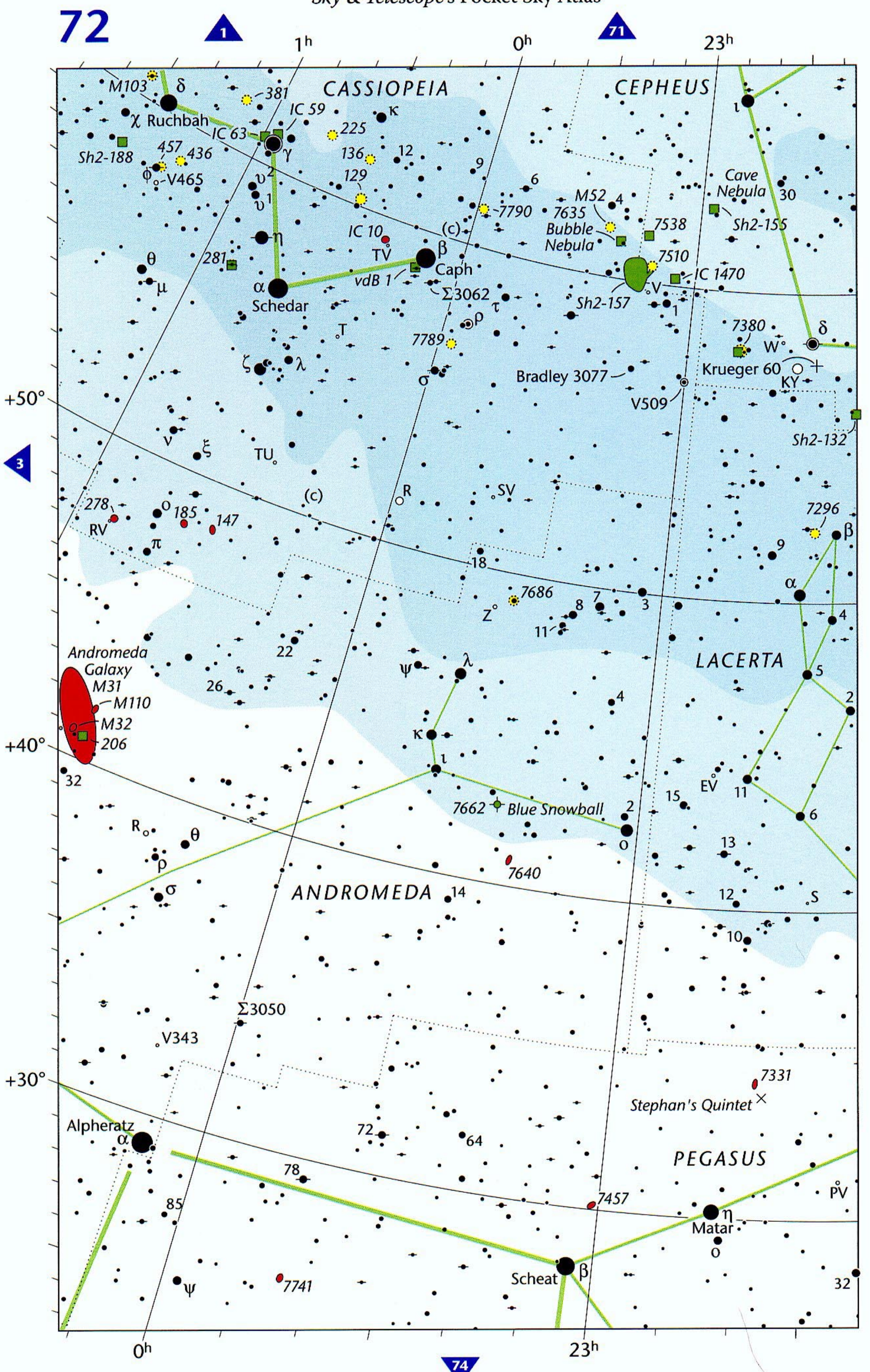
Midnight: August & September

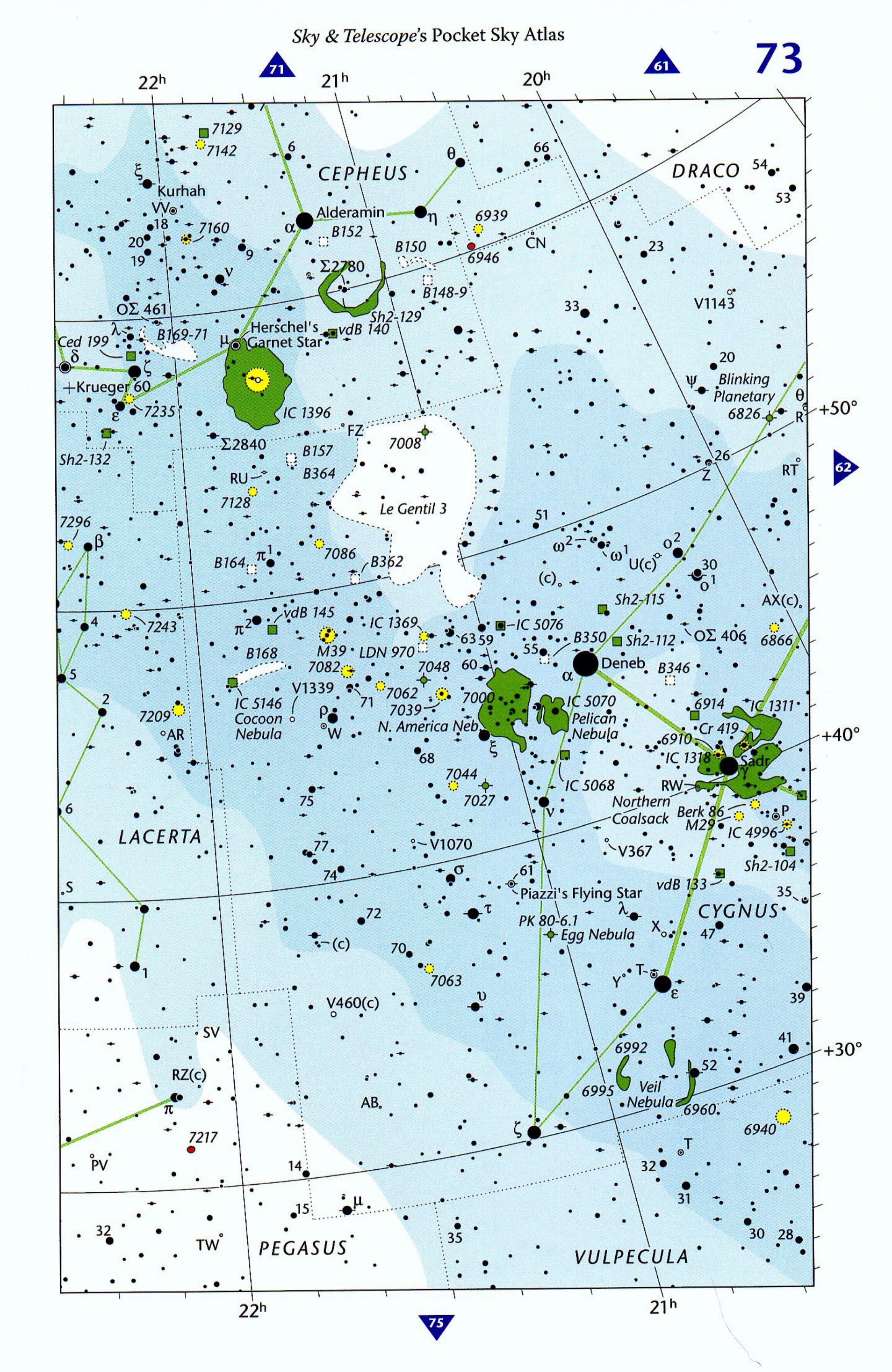
Morning: July




Chart Legend
Double star
Variable stars
Special object
Reference point
Open star clusters
50' (to scale)
<20'
Globular clusters
50' (to scale)
<20'
Galaxies
100' x 20' (to scale)
40' x 30' (to scale)
<20'
Bright nebulae
(to scale)
<20'
Dark nebulae
(to scale)
<20'
Planetary nebulae
50' (to scale)
<20'
–1 0 1 2 3 4 5 6 7
Fainter star
Star magnitudes


7h
8h
9h
10h
11h
12h
13h
14h
15h
16h
17h
18h
23h
22h
+70°
+60°
CAMELOPARDALIS
URSA MINOR
DRACO
CASSIOPEIA
CEPHEUS
North Celestial Pole
Polaris
Errai
Alfirk
Alderamin
Kurhah
Caph
IC 3568
2146
2268
2300
2276
6217
Σ460
SS
188
AR
U
RX
R
UX(c)
S(c)
EI
T
DM
75
35
59
50
47
49
40
23
73
31
16
24
11
7
6
9
4
1
30
18
20
19
7023
6951
vdB 152
Σ2924
vdB 143
7129
7142
7822
Ced 214
Σ3053
Cave Nebula
Sh2-155
7790
M52
Bubble
Nebula
7635
7538
7510
IC 1470
Sh2-157
V
VV
7160
B152
B150
Σ2780
Sh2-129
vdB 140
OΣ 461
B169-71
μ=Herschel's Garnet
Star
IC 1396
Ced 199
7380
W
KY
+Krueger 60
7235
Sh2-132
Σ2840
FZ
Σ3062
7789
Bradley
3077
V509
(c)
61
72
73


1
71
3
74
1h
0h
23h
+50°
+40°
+30°
CASSIOPEIA
CEPHEUS
LACERTA
ANDROMEDA
PEGASUS
Ruchbah
Schedar
Caph
Alpheratz
Scheat
Matar
Andromeda Galaxy
M31
M110
M32
206
M103
IC 59
IC 63
IC 10
IC 1470
Sh2-188
Sh2-157
Sh2-155
Sh2-132
Cave Nebula
Bubble Nebula
M52
7635
7538
7510
7790
7789
7380
7296
7686
7662
Blue Snowball
7640
7331
Stephan's Quintet
7457
7741
vdB 1
Σ3062
Σ3050
Bradley 3077
Krueger 60
V509
V465
V343
381
225
136
129
457
436
281
278
185
147


CEPHEUS
DRACO
LACERTA
CYGNUS
PEGASUS
VULPECULA
Alderamin
Herschel's Garnet Star
Krueger 60
Kurhah
IC 1396
Le Gentil 3
Deneb
Sadr
Blinking Planetary
6826
N. America Neb
IC 5070 Pelican Nebula
IC 5146 Cocoon Nebula
Northern Coalsack
Piazzi's Flying Star
PK 80-6.1 Egg Nebula
Veil Nebula
M39
M29
+50°
+40°
+30°
22h
21h
20h
71
61
62
75

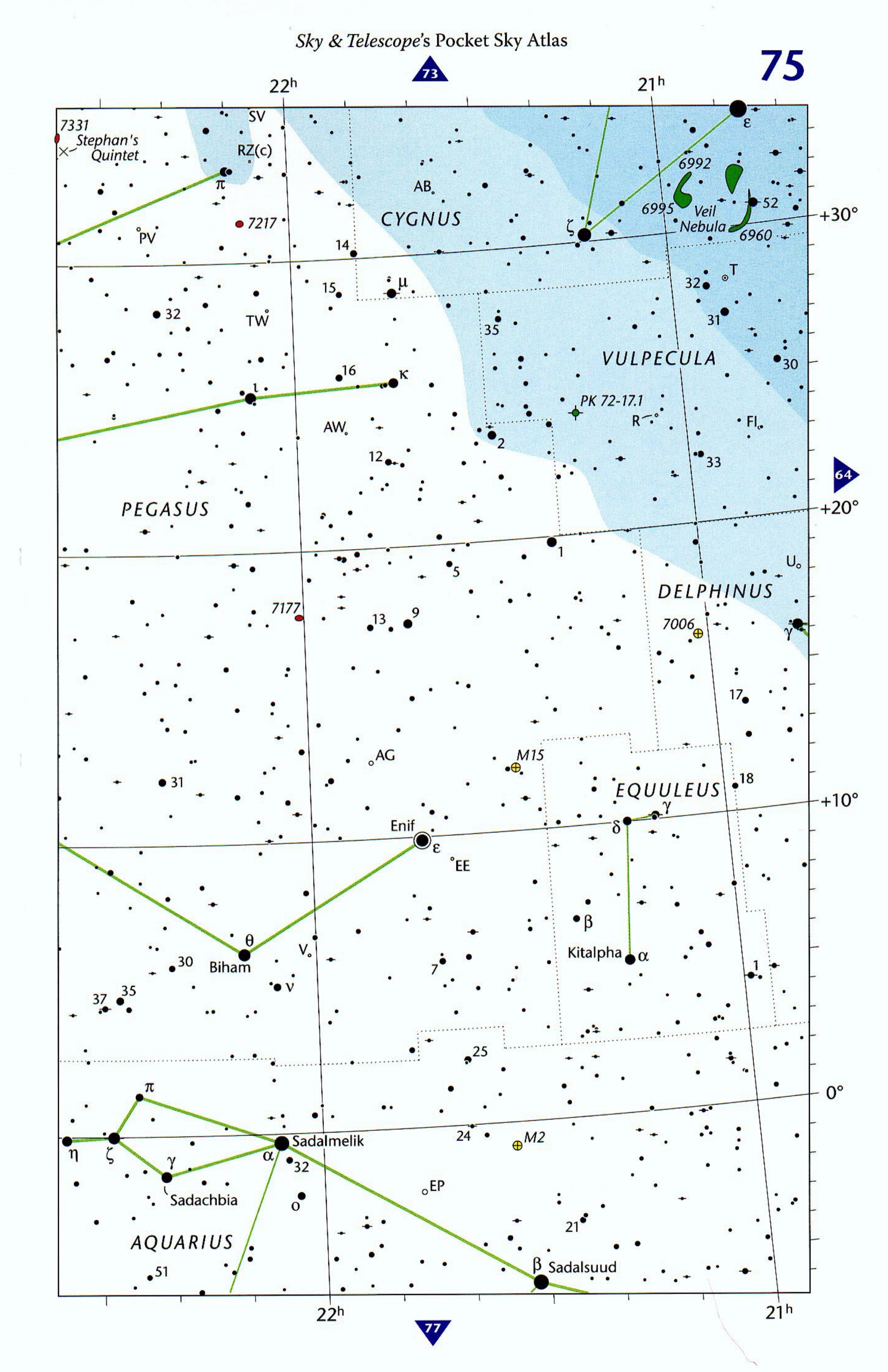
72

0h 23h

ANDROMEDA
Σ3050
V343
7331
Stephan's Quintet
64
72
+30°
α
Alpheratz
78
7457
η
Matar
ο
Scheat
β
85
Σ24
7741
ψ
56
Sadalbari
μ
τ
υ
λ
7332
71
5
χ
+20°
51
ϕ
PEGASUS
75
γ
7814
Algenib
7448
α
Markab
70
66
7479
ξ
34
82
52
+10°
77
ζ
Homam
35
R
58
55
σ
S
59
57
ρ
7619
7626
ω
θ
ι
7
DL
37
PISCES
TX(c)
γ
β
SZ
5
λ
κ
0°
0°
2
Vernal
Equinox
η
5 Cet
ECLIPTIC
7556
29
27
20
AQUARIUS
350°
33
κ
30

0h 23h

76


73
22h
21h
CYGNUS
VULPECULA
PEGASUS
DELPHINUS
EQUULEUS
AQUARIUS
7331
Stephan's Quintet
SV
RZ(c)
AB
PV
7217
6992
6995
Veil Nebula
6960
52
+30°
14
15
μ
T
32
31
35
TW
30
16
κ
ι
PK 72-17.1
R
FI
AW
2
12
33
64
+20°
1
5
U
7177
13
9
7006
γ
17
AG
M15
31
18
+10°
Enif
ε
EE
δ
β
θ
Biham
V
Kitalpha
α
30
ν
7
37
35
25
0°
π
η
ζ
Sadalmelik
24
M2
32
Sadachbia
EP
o
21
β
Sadalsuud
51
77

23h

ω θ 7 DL ι β TX(c) γ SZ 5 λ κ 2 35 37 π

Vernal Equinox
0°
0°

PISCES

η ζ

ECLIPTIC

7556

AQUARIUS

20 350° κ 29 27 51

7

33 φ 7721 30 83 340° χ λ 7606 ψ1 ψ2 ψ3 σ

−10°

3 7727 7723 94 τ

ω2 ω1 97 W R Skat δ MCG-3-1-15 Ced 211

6 104 106 103 66 2 68 AC 108

7 98 S υ 7293 101 99 88 Helix Nebula

−20°

CETUS

89 ER 7377 86

45 7314 24 ζ ε

PISCIS AUSTRINUS

κ2 κ1 7507 δ α

SCULPTOR

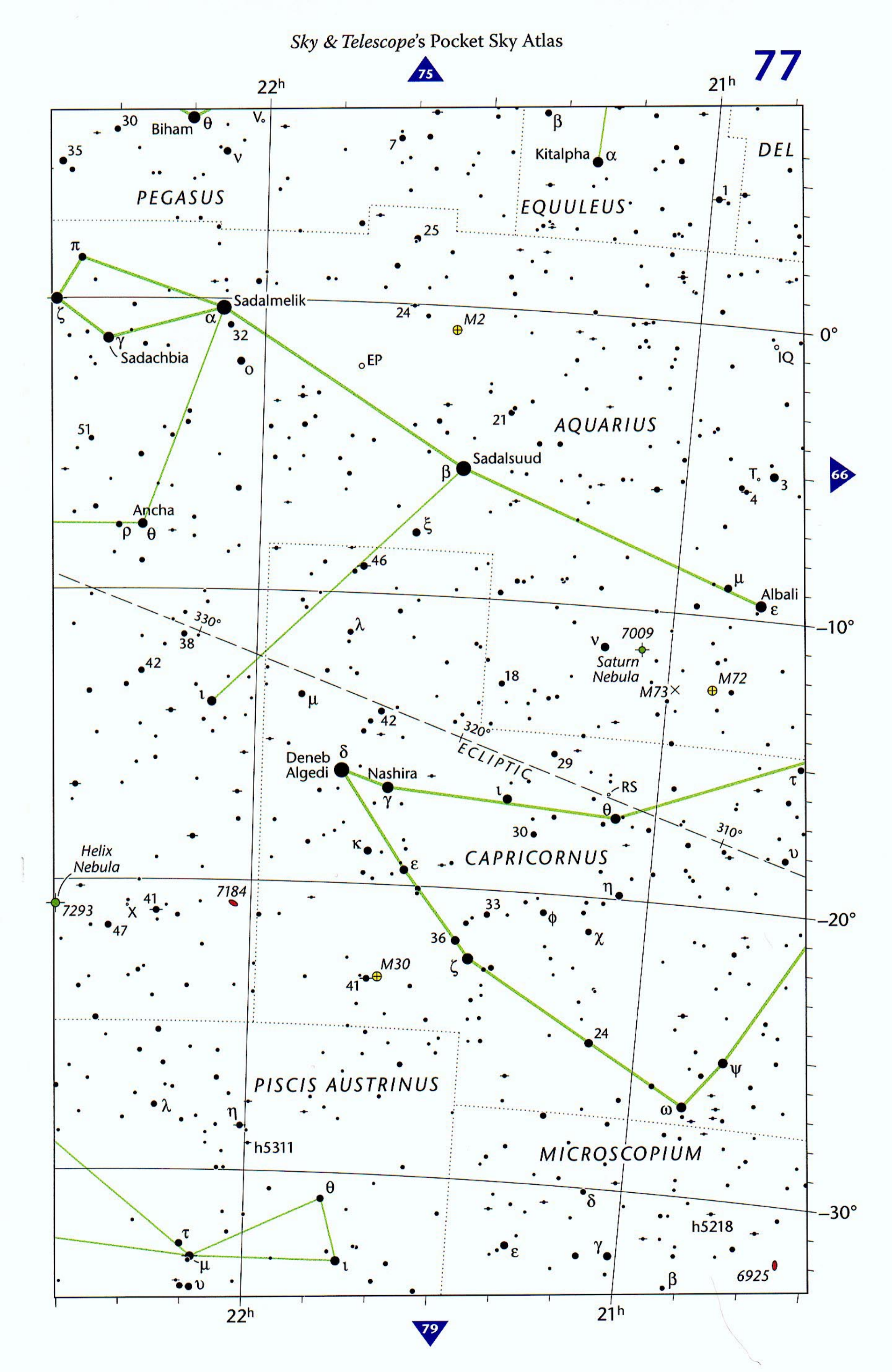
Fomalhaut

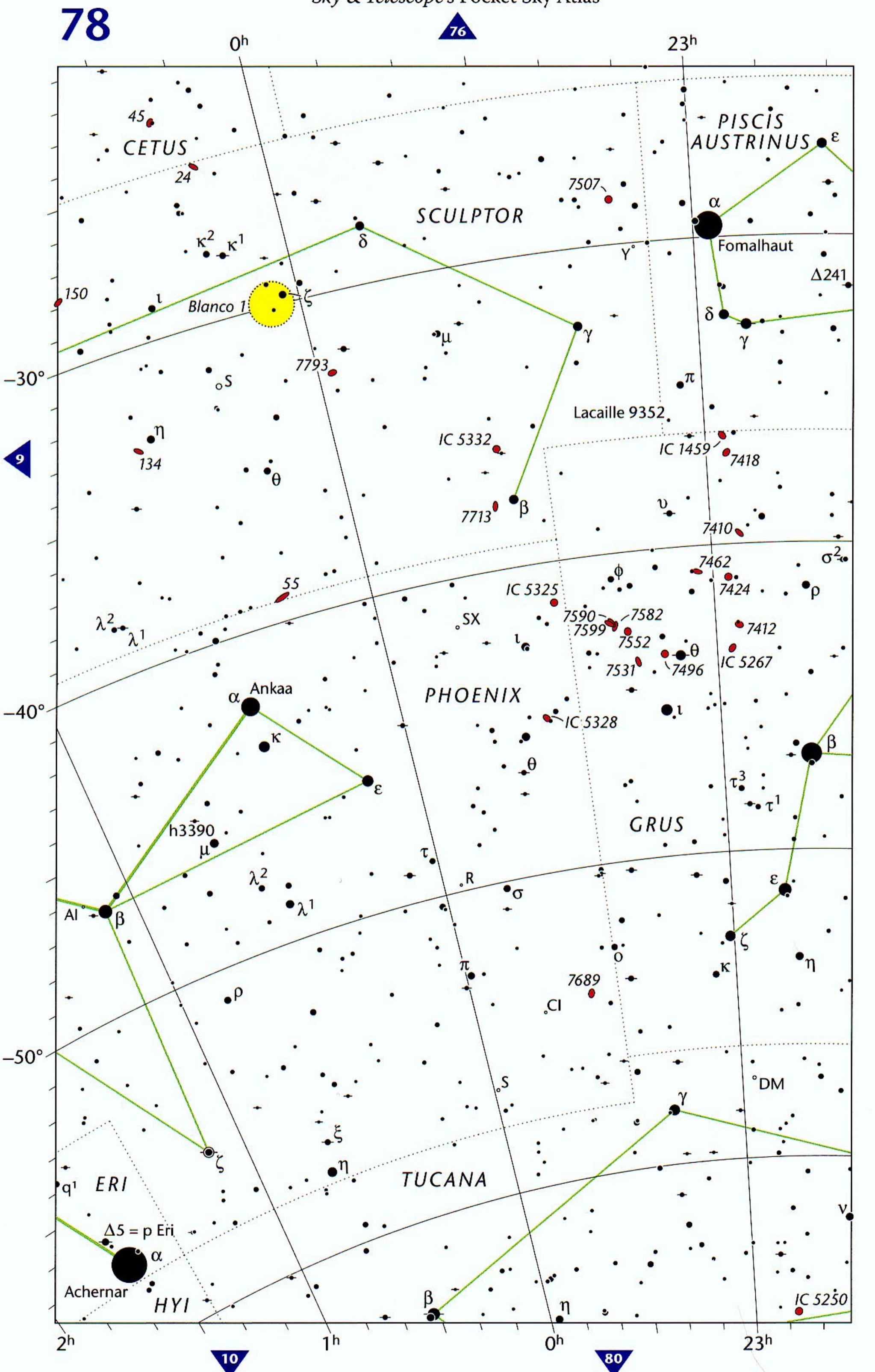
Blanco 1 ζ Y Δ241

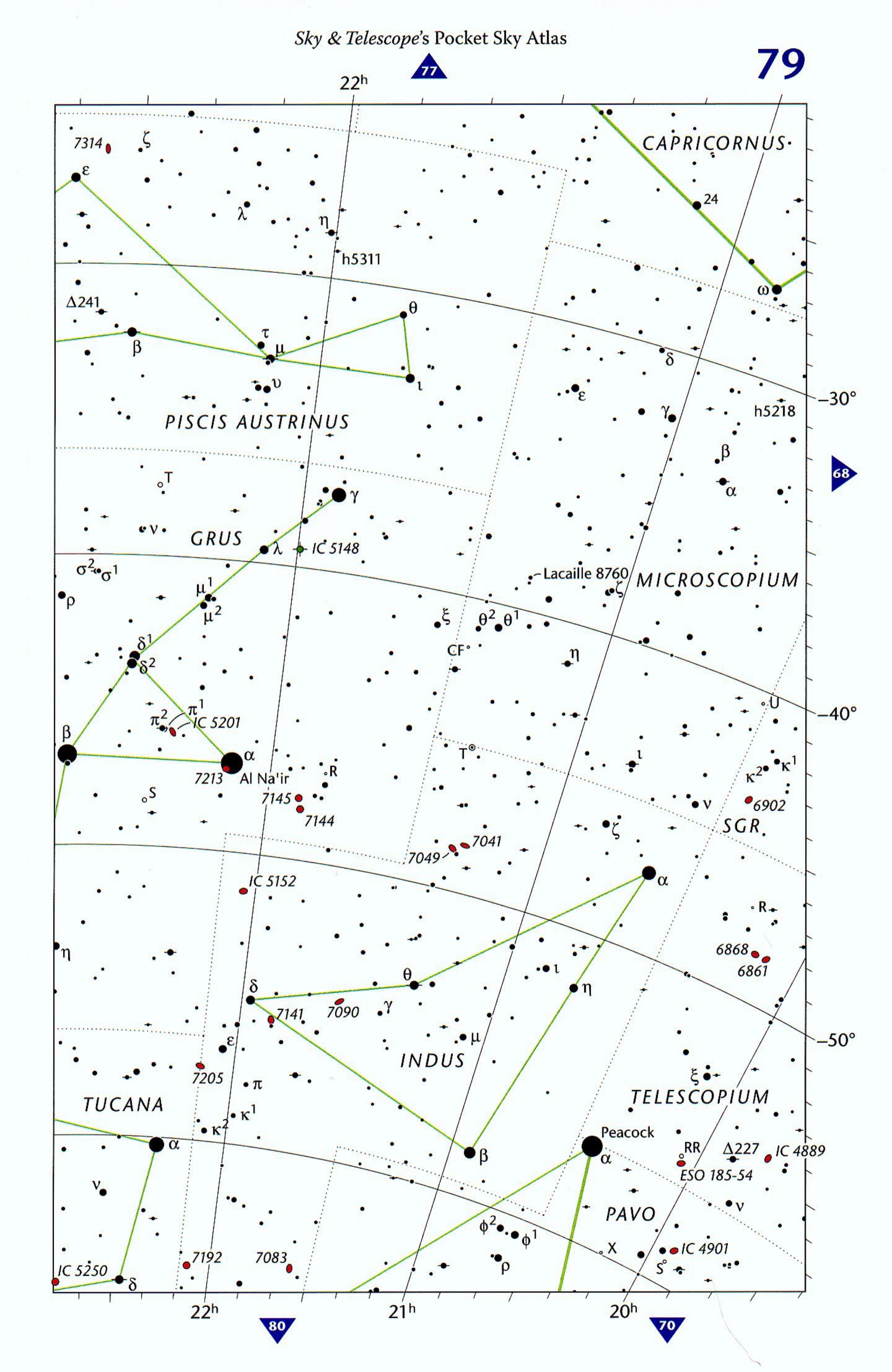
−30°

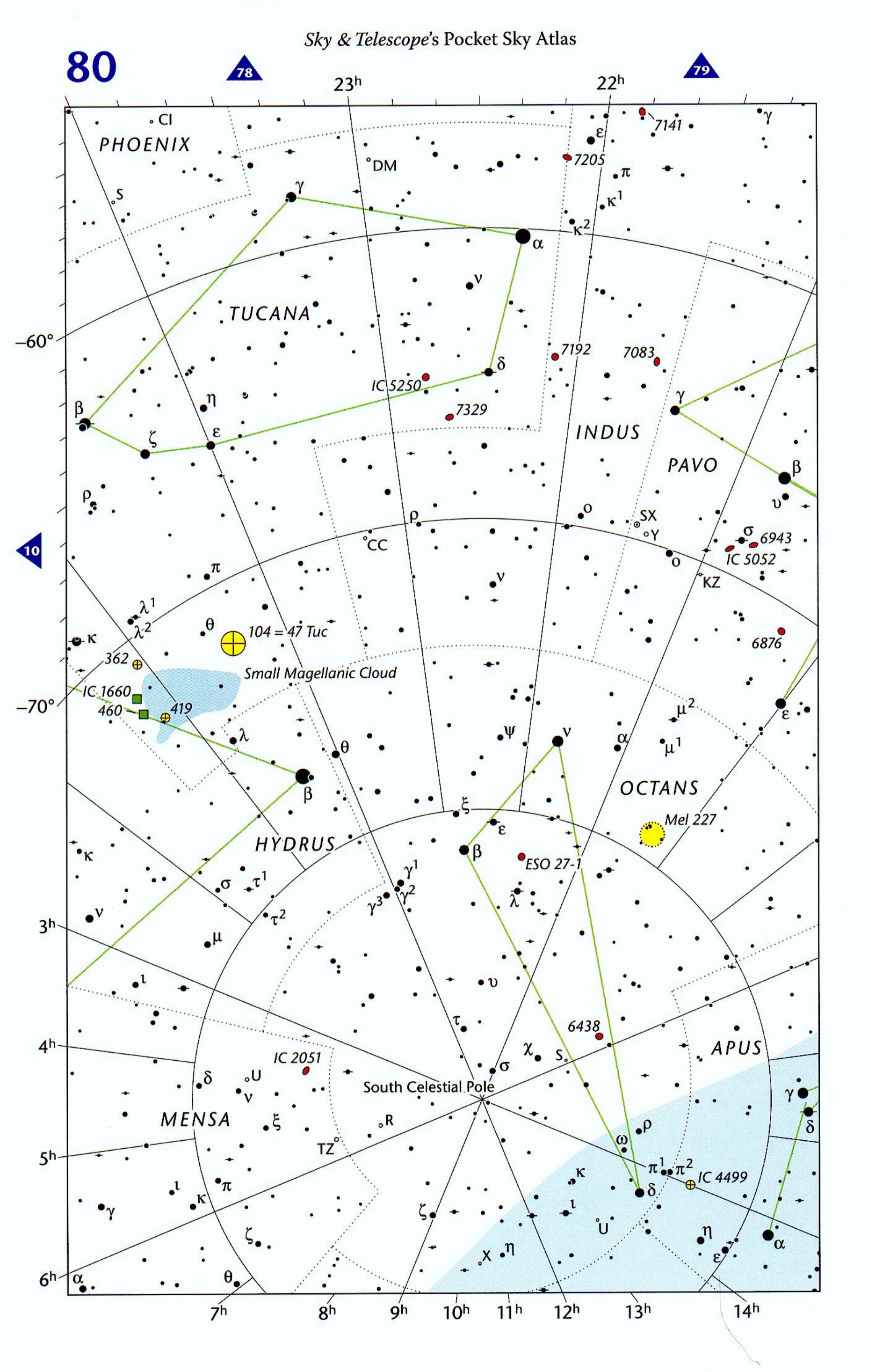
μ γ δ β γ 7793 S

0h 23h


75
22h
21h
DEL
PEGASUS
EQUULEUS
Biham
Kitalpha
Sadalmelik
Sadachbia
M2
EP
IQ
0°
AQUARIUS
Sadalsuud
Ancha
66
Albali
330°
–10°
7009
Saturn
Nebula
M73
M72
320°
ECLIPTIC
Deneb
Algedi
Nashira
RS
310°
CAPRICORNUS
Helix
Nebula
7184
7293
–20°
M30
PISCIS AUSTRINUS
h5311
MICROSCOPIUM
–30°
h5218
6925
79


76
0h
23h
CETUS
45
24
150
PISCIS AUSTRINUS
SCULPTOR
7507
Fomalhaut
Δ241
Blanco 1
7793
Lacaille 9352
IC 5332
IC 1459
7418
134
7713
7410
7462
7424
55
IC 5325
7590
7582
7599
7552
7412
SX
7531
7496
IC 5267
PHOENIX
Ankaa
IC 5328
h3390
GRUS
R
Al
7689
Cl
DM
ERI
TUCANA
Δ5 = p Eri
Achernar
HYI
IC 5250
−30°
−40°
−50°
9
2h
1h
0h
23h
10
80


77
22h
CAPRICORNUS
PISCIS AUSTRINUS
GRUS
MICROSCOPIUM
SGR
INDUS
TELESCOPIUM
TUCANA
PAVO
7314
h5311
Δ241
h5218
IC 5148
Lacaille 8760
IC 5201
7213
Al Na'ir
7145
7144
7041
7049
IC 5152
6902
6868
6861
7141
7090
7205
Peacock
RR
Δ227
IC 4889
ESO 185-54
IC 4901
7192
7083
IC 5250
–30°
–40°
–50°
68
21h
20h
80
70

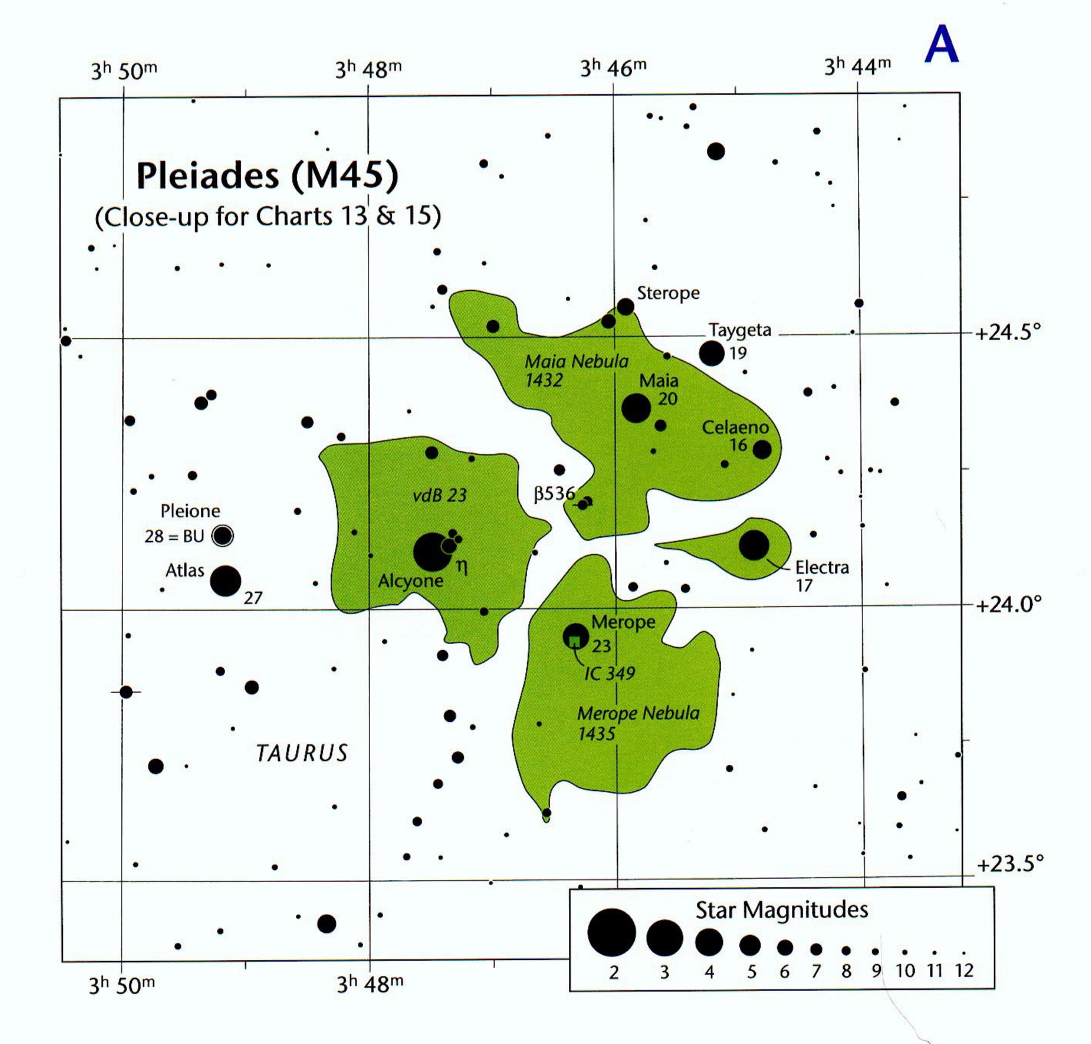

78
79
10
23h
22h
PHOENIX
TUCANA
INDUS
PAVO
OCTANS
HYDRUS
MENSA
APUS
104 = 47 Tuc
Small Magellanic Cloud
South Celestial Pole
Mel 227
ESO 27-1
IC 5250
IC 5052
IC 1660
IC 2051
IC 4499
7141
7205
7192
7083
7329
6943
6876
6438
362
460
419
–60°
–70°
3h
4h
5h
6h
7h
8h
9h
10h
11h
12h
13h
14h

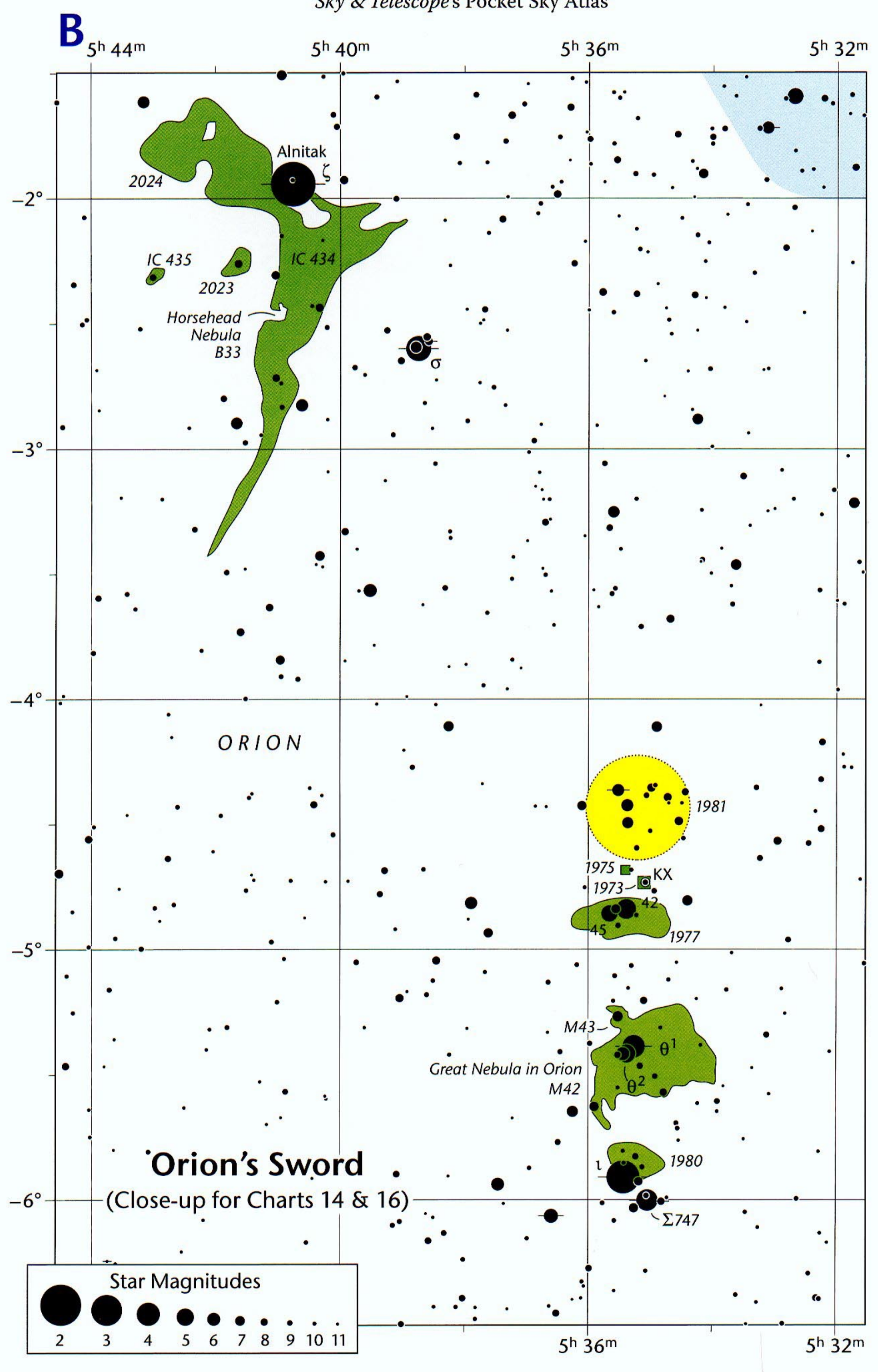
Close-up Charts

The following four charts show some of the most-observed regions of the sky. Compared to those in the main atlas, these charts have a larger scale and include fainter stars and more detail in nebulous areas.

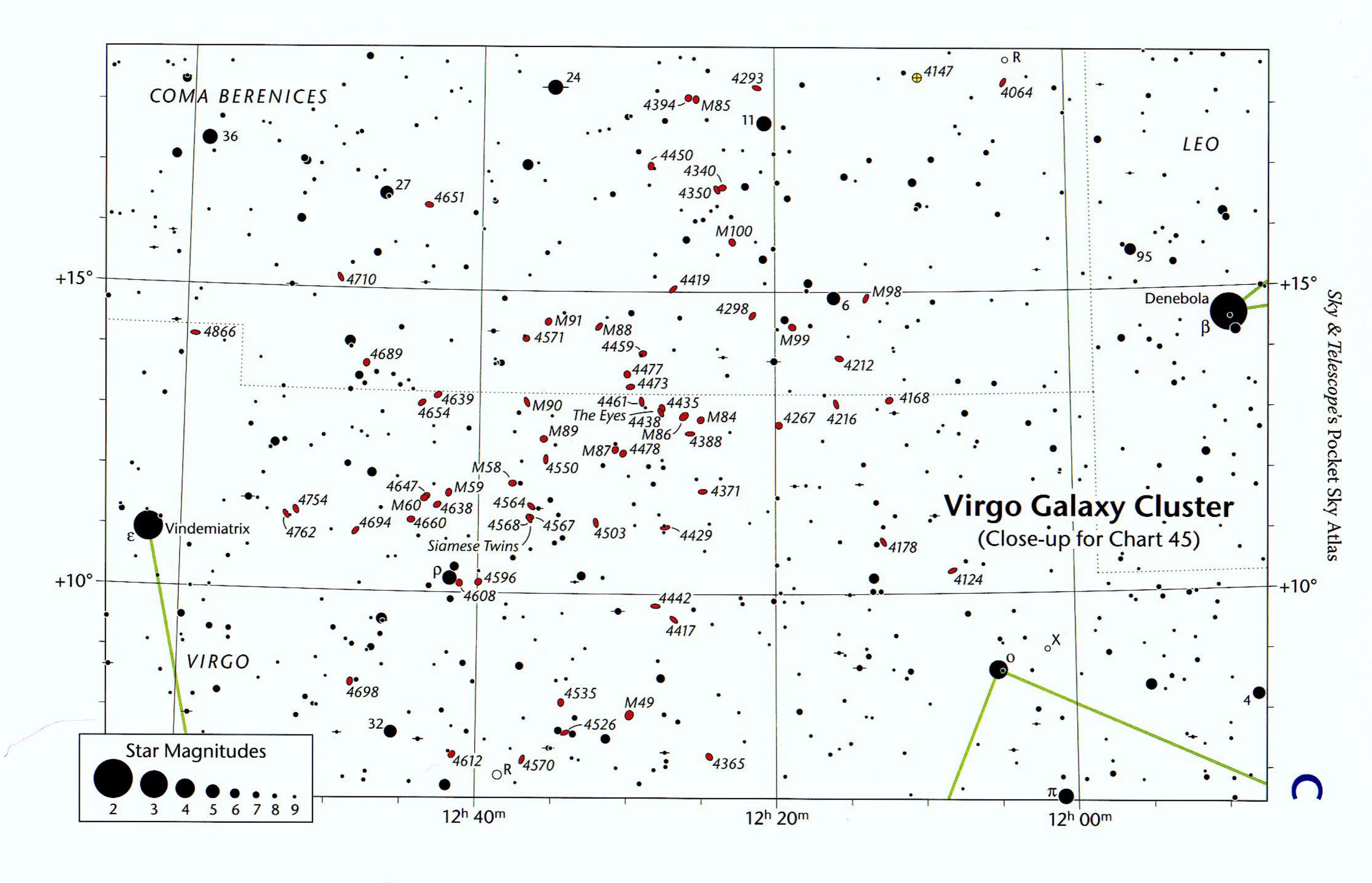
Chart A covers the Pleiades and some of the nebulosity around individual stars. This is the best-known open star cluster in the heavens, but here we omit the dotted

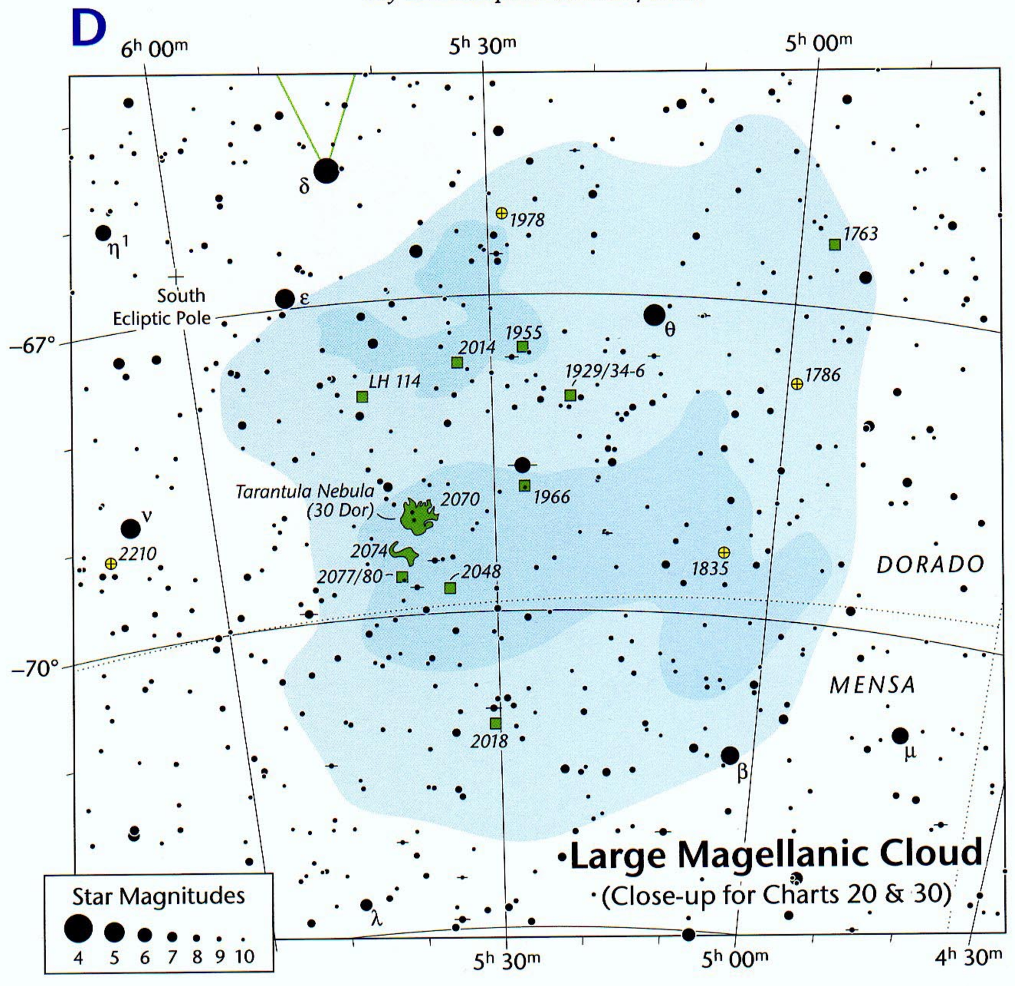
continued on Chart D





B
5h 44m
5h 40m
5h 36m
5h 32m
−2°
−3°
−4°
−5°
−6°
Alnitak
ζ
2024
IC 435
2023
IC 434
Horsehead
Nebula
B33
σ
ORION
1981
1975
KX
1973
42
45
1977
M43
θ1
Great Nebula in Orion
M42
θ2
ι
1980
Σ747
Orion's Sword
(Close-up for Charts 14 & 16)
Star Magnitudes
2 3 4 5 6 7 8 9 10 11


C
Virgo Galaxy Cluster
(Close-up for Chart 45)
COMA BERENICES
LEO
VIRGO
Denebola
β
Vindemiatrix
ε
ρ
π
o
X
R
95
6
11
24
27
36
4
32
+15°
+10°
12h 00m
12h 20m
12h 40m
4147
4064
4293
4394
M85
4450
4340
4350
M100
4651
4710
4419
M98
4298
M99
4866
M91
4571
M88
4459
4477
4473
4689
4212
4168
4639
4654
M90
4461
The Eyes
4438
4435
M84
M86
4388
4267
4216
M89
M87
4478
4550
M58
4647
M59
M60
4638
4660
4694
4754
4762
4564
4568
4567
Siamese Twins
4503
4429
4371
4178
4124
4596
4608
4442
4417
4698
4535
M49
4526
4612
4570
4365
Star Magnitudes
2
3
4
5
6
7
8
9



continued from Chart A

yellow open-cluster symbol for clarity.

Chart B includes the easternmost bright star of Orion's Belt, Alnitak (ζ Orionis), and the softly glowing nebulosity IC 434 that makes the dark Horsehead Nebula visible in silhouette. A few degrees to the southwest is the incomparable region of Orion's Sword, containing M42, the Orion Nebula.

Visual comet hunters traditionally avoid the Virgo Galaxy Cluster, shown in Chart C, where many galaxies masquerade as comet suspects. With the help of this chart, however, the brightest of these galaxies can be identified.

Chart D, the Large Magellanic Cloud, shows only a handful of the deep-sky objects that can be seen in small telescopes within this satellite galaxy of our own Milky Way.

General Index

For stars with common names and nonstellar objects, this listing gives the number (1–80) of a main chart or the letter (A–D) of a close-up chart on which they can be found. Objects are grouped by type: stars, galaxies (and groups), open star clusters, globular clusters, bright nebulae (including supernova remnants), dark nebulae, planetary nebulae, and other. A constellation index appears on page xii.

Bold type is used to indicate a chart that shows the object well (that is, not too near an edge). In the rare cases when an object is plotted but not labeled on a given chart (due to being near an edge or in a crowded field), the label can be found on another chart of the same region.

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Objects in the Caldwell Catalog

Patrick Moore, Britain's renowned popularizer of astronomy, compiled the Caldwell Catalog of 109 deep-sky objects in 1995. Some are just as spectacular as the best Messier objects; others are astrophysically intriguing.

The Go To mounts of many telescopes allow objects to be located using their C (Caldwell) numbers alone. While C numbers are not used in this atlas, these objects can be found on the charts by means of their corresponding NGC, IC, or other designation listed below.

Bold type is used to indicate any chart that shows the object well (that is, not too near an edge).

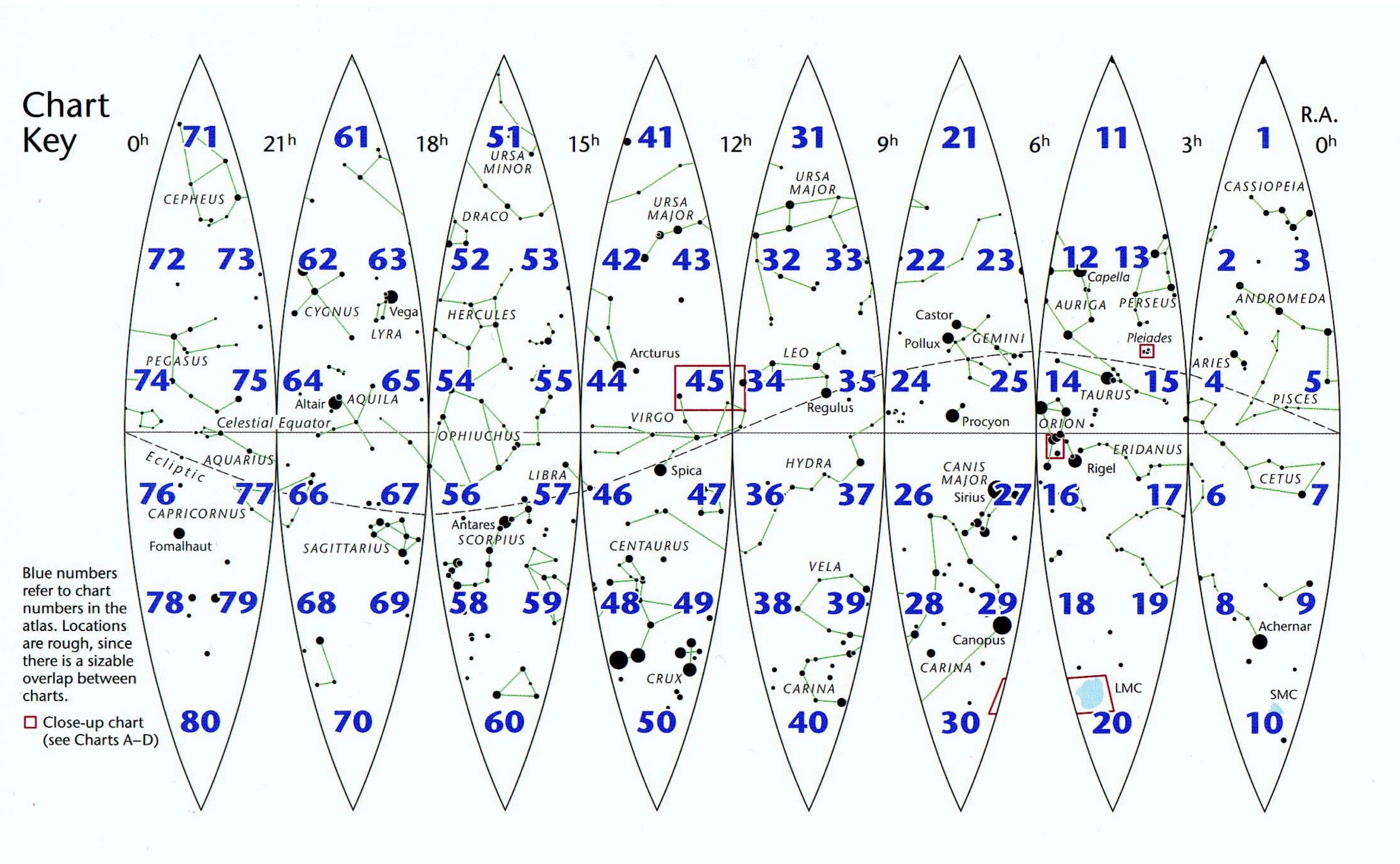
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Objects in the Messier Catalog

Many of the best deep-sky showpieces were first tabulated by French comet hunter Charles Messier (1730–1817) or his collaborator, Pierre Méchain (1744–1805). In this atlas the Messier (M) number takes precedence over any other designation. Listed below, in parentheses, is the corresponding NGC or IC designation for most of these objects.

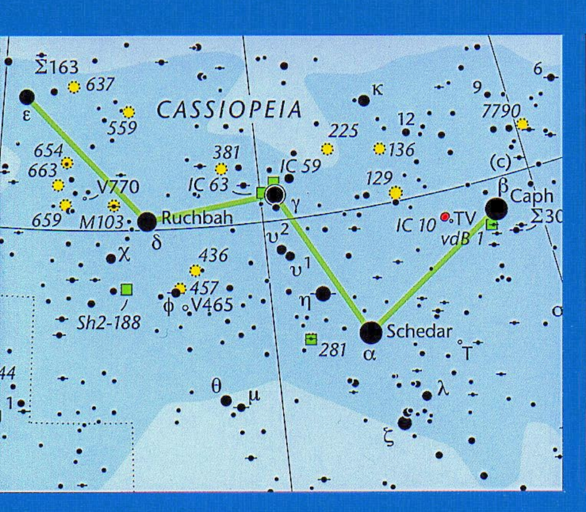
Bold type is used to indicate any chart that shows the object well (not too near an edge).

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R.A.
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18h
15h
12h
9h
6h
3h
0h
71
61
51
41
31
21
11
1
CEPHEUS
URSA MINOR
DRACO
URSA MAJOR
URSA MAJOR
CASSIOPEIA
72
73
62
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52
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Capella
CYGNUS
Vega
LYRA
HERCULES
AURIGA
PERSEUS
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Antares
SCORPIUS
Fomalhaut
SAGITTARIUS
CENTAURUS
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Achernar
Canopus
CRUX
CARINA
CARINA
LMC
SMC
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10
Blue numbers refer to chart numbers in the atlas. Locations are rough, since there is a sizable overlap between charts.
Close-up chart (see Charts A–D)

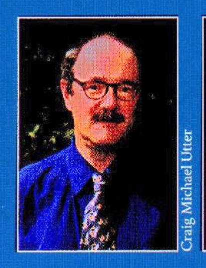
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